

# LABORATORY CLASSES

Plan of laboratory classes for the international students of **medical faculty** studying biochemistry in English  
2025 – 2026 year

## Autumn semester

| Week<br>N | Date        | Topic   |
|-----------|-------------|---|
| 1         | 01.09-05.09 | Introduction to practical work. Introduction to biochemistry. The structure of amino acids and peptides. Determination of the protein content in the biological fluids. « <i>Biochemistry: manual for...</i> » (p.4-5); <i>textbook 1</i> (p.3-6); <i>textbook 2</i> (p. 13-28); <i>textbook 3</i> (p. 14-21); <i>lecture material</i> .  |
| 2         | 08.09-12.09 | Structure and functions of proteins. Physical and chemical properties of proteins. Mechanisms of protein sedimentation. « <i>Biochemistry: manual for...</i> » (p.5-7); <i>textbook 1</i> (p.6-9); <i>textbook 2</i> (p. 28-35); <i>textbook 3</i> (p. 14-49); <i>lecture material</i> .  |
| 3         | 15.09-19.09 | Methods of separation, isolation and purification of proteins. Compound proteins. Gel filtration. « <i>Biochemistry: manual for...</i> » (p.7-8); <i>textbook 1</i> (p.9-11); <i>textbook 3</i> (p. 21-30); <i>lecture material</i> .   |
| 4         | 22.09-26.09 | Enzymes, classification, structure, properties. « <i>Biochemistry: manual for...</i> » (p.9-10); <i>textbook 1</i> (p.11-12); <i>textbook 2</i> (p.80-103); <i>textbook 3</i> (p. 49-72); <i>lecture material</i> .   |
| 5         | 29.09-03.10 | Regulation of enzyme activity. Determination of enzyme activity. « <i>Biochemistry: manual for...</i> » (p.11-12); <i>textbook 1</i> (p.15-18); <i>textbook 2</i> (p. 91-93,103-113); <i>textbook 3</i> (p. 72-80); <i>lecture material</i> .   |
| 6         | 06.10-10.10 | <b>COLLOQUIUM “THE CHEMISTRY OF PROTEINS. ENZYMES”</b><br>Questions for preparation – see « <i>Biochemistry: manual for...</i> » (p.13)   |
| 7         | 13.10-17.10 | Introduction to metabolism. The central metabolic pathways: oxidative decarboxylation of pyruvate, citric acid cycle. Evaluation of TCA cycle functioning. « <i>Biochemistry: manual for...</i> » (p.14-15); <i>textbook 1</i> (p.19-24); <i>textbook 2</i> (p. 71-79, 114-123, 149-150); <i>textbook 3</i> (p. 80-92; 122-136; 140-144); <i>lecture material</i> .                     |
| 8         | 20.10-24.10 | Biological oxidation. Oxidative phosphorylation. « <i>Biochemistry: manual for...</i> » (p.16-17); <i>textbook 1</i> (p.24-29); <i>textbook 2</i> (p. 124-135, 408-411); <i>textbook 3</i> (p. 86-102); <i>lecture material</i> .   |
| 9         | 27.10-31.10 | Digestion of carbohydrates. Glycogenesis and glycogenolysis. Glycolysis. Detection of alcoholic fermentation products. « <i>Biochemistry: manual for...</i> » (p.17-18); <i>textbook 1</i> (p. 30-38); <i>textbook 2</i> (p. 46-56,137-149, 156-167); <i>textbook 3</i> (p. 136-153); <i>lecture material</i> .   |
| 10        | 03.11-07.11 | Metabolic pathways of pyruvate. Gluconeogenesis. Aerobic oxidation of glucose to end products (CO <sub>2</sub> and H <sub>2</sub> O). Determination of pyruvate in the urine. « <i>Biochemistry: manual for...</i> » (p.18-19); <i>textbook 1</i> (p.21-24,38-42); <i>textbook 2</i> (p. 149-150, 167-171, 118-123); <i>textbook 3</i> (p. 136-145; 153-163); <i>lecture material</i> . |
| 11        | 10.11-14.11 | Secondary pathways of glucose metabolism. Determination of blood glucose. « <i>Biochemistry: manual for...</i> » (p.20-21); <i>textbook 1</i> (p.37,42-46); <i>textbook 2</i> (p. 150-155, 172-176); <i>textbook 3</i> (p. 153-173); <i>lecture material</i> .  |
| 12        | 17.11-21.11 | <b>COLLOQUIUM “INTRODUCTION TO METABOLISM. CENTRAL METABOLIC PATHWAYS. TISSUE RESPIRATION. OXIDATIVE PHOSPHORYLATION. CARBOHYDRATE METABOLISM”</b><br>Questions for preparation – see « <i>Biochemistry: manual for...</i> » (p.21-22)  |
| 13        | 24.11-28.11 | Lipid metabolism. Digestion and re-synthesis. Transport of exogenous lipids. Evaluation of lipase activity. « <i>Biochemistry: manual for...</i> » (p.22-24); <i>textbook 1</i> (p.47-52); <i>textbook 2</i> (p. 57-70, 177-178); <i>textbook 3</i> (p. 197-219); <i>lecture material</i> .   |
| 14        | 01.12-05.12 | Lipid transport in blood. Cholesterol metabolism. Storage and mobilization of lipids. Determination of plasma beta-lipoproteins. « <i>Biochemistry: manual for...</i> » (p.24-25); <i>textbook 1</i> (p.52-54,60-61); <i>textbook 2</i> (p. 179-182, 207-212); <i>textbook 3</i> (p. 205-231); <i>lecture material</i> .  |
| 15        | 08.12-12.12 | Intracellular metabolism of fatty acids. Ketone bodies. Determination of cholesterol in serum. « <i>Biochemistry: manual for...</i> » (p.25-27); <i>textbook 1</i> (p. 54-60,61-63); <i>textbook 2</i> (p. 182-196, 346-349); <i>textbook 3</i> (p. 173-197); <i>lecture material</i> .   |
| 16        | 15.12-19.12 | <b>COLLOQUIUM “LIPID METABOLISM”</b><br>Questions for preparation – see « <i>Biochemistry: manual for...</i> » (p.27)   |
| 17        | 22.12-26.12 | Control over practical skills of biochemical analysis.<br>« <i>Biochemistry: manual for...</i> » (p.57-58)  |
| 18        | 29.12-02.01 | Credit  |

Head of the department of biochemistry,  
professor



A.D. Tahanovich

