

# THEMATIC PLAN OF PRACTICAL CLASSES IN PATHOLOGICAL PHYSIOLOGY

for 3rd year students of the FIS  
«Gomel State Medical University»

**VI semester of the 2025/2026 academic year**

№ п/п	Name of topics, content of practical classes	Number of hours, date
<b>18.</b>	<p><b>Pathophysiology of red blood cells. Dyserythropoietic anemias</b></p> <ol style="list-style-type: none"> <li>1. Causes and mechanisms of changes in the physicochemical properties of blood in various diseases.</li> <li>2. Pathological forms of red blood cells, pathological inclusions in red blood cells.</li> <li>3. Iron deficiency anemias: etiology, pathogenesis, clinical manifestations. Iron metabolism and the role of iron in the body.</li> <li>4. Megaloblastic anemias: etiology, pathogenesis, clinical manifestations.</li> <li>5. Anemias of chronic diseases.</li> <li>6. Anemias associated with leukemia and other bone marrow tumors.</li> <li>7. Aplastic anemias. Etiology, pathogenesis, and main clinical manifestations.</li> </ol>	<p><b>3</b></p> <p><b>09.02.26- 14.02.26</b></p>
<b>19.</b>	<p><b>Hemolytic anemia. Erythrocytosis</b></p> <ol style="list-style-type: none"> <li>1. Hereditary hemolytic anemias: types, causes, mechanisms of development, clinical and hematological manifestations.</li> <li>2. Acquired hemolytic anemias: types, causes, mechanisms of development, clinical and hematological manifestations.</li> <li>3. Autoimmune hemolytic anemias: types, causes, mechanisms of development, clinical and hematological manifestations.</li> <li>4. Erythrocytosis: definition of concepts, types, causes, mechanisms of development, clinical and hematological manifestations.</li> <li>5. Disorders and compensatory-adaptive processes in the body with anemia and erythrocytosis.</li> <li>6. Principles of anemia therapy.</li> </ol>	<p><b>3</b></p> <p><b>16.02.26- 21.02.26</b></p>
<b>20.</b>	<p><b>Pathophysiology of the leukocyte system. Changes in the quantitative and qualitative composition of leukocytes.</b></p> <ol style="list-style-type: none"> <li>1. Disorders of the structure and function of individual types of leukocytes and their role in pathological processes.</li> <li>2. Leukocytosis: types, causes, and mechanisms of development, changes in the leukocyte count of peripheral blood. The significance of leukocytosis.</li> <li>3. Leukopenia: types, causes, mechanisms of development, and manifestations. The significance of leukopenia.</li> <li>4. Leukemoid reactions: types, etiology, pathogenesis, changes in hematopoietic organs and peripheral blood.</li> <li>5. Differences between leukemoid reactions and leukemias and their significance for the body. Infectious mononucleosis.</li> <li>6. Agranulocytosis: classification, types, causes, mechanisms of development, and clinical manifestations. Peripheral blood picture in agranulocytosis. Pancytopenia.</li> <li>7. White blood cell count and its analysis. Nuclear shift index.</li> </ol>	<p><b>3</b></p> <p><b>23.02.26- 28.02.26</b></p>
<b>21.</b>	<p><b>Hemoblastoses. Leukemia</b></p> <ol style="list-style-type: none"> <li>1. Concept of hemoblastoses, general characteristics.</li> <li>2. Leukemia: definition, general characteristics, principles of classification, tumor nature of leukemia.</li> <li>3. Etiology of leukemia: the role of viruses, chemical carcinogens, ionizing radiation, the role of abnormal oncogene expression.</li> <li>4. Characteristics of leukemia cells.</li> <li>5. Acute leukemia: classification. Hematopoiesis characteristics and peripheral</li> </ol>	<p><b>3</b></p> <p><b>02.03.26- 07.03.26</b></p>

	<p>blood picture.</p> <p>6. Chronic leukemia: classification. Hematopoiesis characteristics and peripheral blood picture.</p> <p>7. Main disorders in the body associated with leukemia and their mechanisms.</p> <p>8. Principles of leukemia diagnosis and treatment.</p>	
<b>22.</b>	<p><b>Pathology of the hemostasis system</b></p> <p>1. Hemostasis mechanisms. Primary and secondary physiological anticoagulants.</p> <p>2. Vascular-platelet hemostasis pathology: types, causes, mechanisms of development, manifestations.</p> <p>3. Coagulation hemostasis pathology: types, etiology, pathogenesis, manifestations.</p> <p>4. Disseminated intravascular coagulation (DIC): etiology, classification principles.</p> <p>5. Pathogenesis, main clinical manifestations, and diagnostic principles of DIC.</p> <p>6. Vasopathies.</p> <p>7. Principles of correction of hemostatic disorders.</p>	<p><b>3</b></p> <p><b>09.03.26-14.03.26</b></p>
<b>23.</b>	<p><b>Final lesson №3 on the topics:</b></p> <p>1. Pathophysiology of the blood system. Changes in total blood volume. Blood loss.</p> <p>2. Pathophysiology of red blood cells. Dyserythropoietic anemias.</p> <p>3. Hemolytic anemia. Erythrocytosis.</p> <p>4. Pathophysiology of the leukocyte system. Changes in the quantitative and qualitative composition of leukocytes.</p> <p>5. Hemoblastoses. Leukemia.</p> <p>6. Pathology of the hemostasis system.</p>	<p><b>3</b></p> <p><b>16.03.26-21.03.26</b></p>
<b>24.</b>	<p><b>Cardiovascular pathophysiology. Cardiac dysfunction.</b></p> <p>1. The concept of circulatory failure, its forms, causes, hemodynamic parameters, and manifestations.</p> <p>2. Heart failure: definition and types.</p> <p>3. Overload and myocardial forms of heart failure: types, etiology, and mechanisms.</p> <p>4. Urgent and long-term mechanisms of heart failure compensation. Mechanisms of decompensation.</p> <p>5. Principles of therapy and prevention of heart failure.</p> <p>6. Coronary insufficiency: types and clinical forms. Ischemic heart disease: forms, causes, mechanisms of development, complications, and outcomes.</p> <p>7. Heart rhythm disturbances (arrhythmias), types. Disorders of general and coronary circulation in arrhythmias.</p> <p>8. Disturbances of cardiac automatism, conduction, and excitability. Causes, mechanisms, electrophysiological mechanisms, ECG signs.</p> <p>9. Fibrillation and defibrillation of the heart, the concept of artificial pacemakers.</p>	<p><b>3</b></p> <p><b>23.03.26-28.03.26</b></p>
<b>25.</b>	<p><b>Circulatory disorders associated with vascular dysfunction</b></p> <p>1. Arterial hypertension: definition. Classification principles.</p> <p>2. Primary (essential) arterial hypertension: factors stabilizing elevated blood pressure.</p> <p>3. Secondary ("symptomatic") arterial hypertension: types, causes, and mechanisms of development.</p> <p>4. Hemodynamics in various types of arterial hypertension.</p> <p>5. Complications and consequences of arterial hypertension. Principles of arterial hypertension therapy.</p> <p>6. Experimental models of arterial hypertension.</p> <p>7. Arterial hypotension: types, causes, and mechanisms of development.</p> <p>8. Atherosclerosis: causes, mechanisms of development, role in cardiovascular pathology. The relationship between arterial hypertension and atherosclerosis.</p> <p>9. Pathology of cerebral circulation: general etiology and pathogenesis. Main forms of disorders, compensation mechanisms. Principles of therapy.</p>	<p><b>3</b></p> <p><b>30.03.26-04.04.26</b></p>
<b>26.</b>	<p><b>Pathophysiology of external respiration</b></p> <p>1. Alveolar ventilation disorders: types, causes, mechanisms, consequences.</p> <p>2. Reflex breathing disorders, damage to the respiratory center.</p>	<p><b>3</b></p> <p><b>06.04.26-</b></p>

	<p>3. Pathological forms of respiration: characteristics and mechanisms.</p> <p>4. Pulmonary blood flow disorders. Localized unevenness of ventilation-perfusion relationships.</p> <p>5. Impaired alveolar-capillary diffusion: causes and consequences.</p> <p>6. Compensatory and adaptive processes in the external respiratory system when its individual components are damaged.</p> <p>7. Changes in ventilation parameters, blood gas composition, and acid-base balance in respiratory disorders.</p> <p>8. Respiratory failure: definition, stages, and manifestations. Dyspnea: types and mechanisms of development.</p>	<p><b>11.04.26</b></p>
27.	<p><b>Pathophysiology of the digestive system</b></p> <p>1. General etiology and pathogenesis of digestive system disorders.</p> <p>2. Appetite disorders, taste disorders, impaired salivation, chewing, swallowing, and esophageal function: causes and consequences.</p> <p>3. Impaired gastric secretory function: causes and mechanisms. Types of pathological secretion.</p> <p>4. Impaired gastric motor and evacuation function: types, causes, and mechanisms. The relationship between secretory and motor disorders.</p> <p>5. Gastric and duodenal ulcers.</p> <p>6. Impaired intestinal secretory function. Impaired digestion and absorption.</p> <p>7. Impaired intestinal motility: types, causes, mechanisms, and consequences.</p> <p>8. Impaired intestinal barrier function: types, causes, mechanisms, and consequences.</p> <p>9. Impaired pancreatic secretory function: acute and chronic pancreatitis.</p>	<p><b>3</b></p> <p><b>13.04.26-18.04.26</b></p>
28.	<p><b>Pathophysiology of the liver</b></p> <p>1. General etiology and pathogenesis of liver diseases.</p> <p>2. Disorders of portal circulation and arterial blood supply to the liver.</p> <p>3. Parenchymal liver damage. Impaired bile secretion.</p> <p>4. Liver failure: types, causes, mechanisms of development, and manifestations.</p> <p>5. Hepatic coma: etiology, pathogenesis, and clinical manifestations.</p> <p>6. Jaundice: types, mechanisms, and manifestations.</p> <p>7. Syndromes in liver diseases and their pathogenetic evaluation.</p> <p>8. Principles of prevention and treatment of the main syndromes and diseases of the liver.</p>	<p><b>3</b></p> <p><b>20.04.26-25.04.26</b></p>
29.	<p><b>Pathophysiology of the kidneys</b></p> <p>1. Glomerular filtration disorders: types, causes, mechanisms, and manifestations.</p> <p>2. Tubular dysfunction: types, causes, mechanisms, and manifestations.</p> <p>3. Renal and extrarenal syndromes.</p> <p>4. Glomerulopathies: etiology, pathogenesis, morphofunctional manifestations, complications, and outcomes.</p> <p>5. Nephrotic syndrome: types and mechanisms of development.</p> <p>6. Pyelonephritis: etiology and pathogenesis.</p> <p>7. Acute kidney injury and chronic kidney disease: etiology, pathogenesis, stages, complications, and outcomes. Renal failure.</p> <p>8. Nephrolithiasis: etiology, pathogenesis, and complications.</p>	<p><b>3</b></p> <p><b>27.04.26-02.05.26</b></p>
30.	<p><b>Pathophysiology of the endocrine system</b></p> <p>1. Disruption of feedback and self-regulation mechanisms in the neuroendocrine system.</p> <p>2. Main types of endocrine disorders: classification principles, general characteristics, and common mechanisms.</p> <p>3. Pathology of the hypothalamic-pituitary system.</p> <p>4. Typical forms of adrenal pathology and their manifestations.</p> <p>5. Thyroid dysfunction.</p> <p>6. Parathyroid dysfunction.</p> <p>7. Dysfunction of the sex glands.</p>	<p><b>3</b></p> <p><b>04.05.26-09.05.26</b></p>

	8. General characteristics of detection methods and principles of therapy of endocrine disorders.	
<b>31.</b>	<b>Pathophysiology of the nervous system</b> 1. General etiology of nervous system disorders. 2. General pathogenesis of nervous system disorders. 3. Typical pathological processes in the nervous system. 4. Neurogenic sensory disorders. Pain, its types, mechanisms, and biological significance. Fundamentals of pain relief. 5. Neurogenic locomotor disorders: types and manifestations. 6. Autonomic nervous system disorders, their types and main manifestations. 7. Neurogenic trophic disorders. 8. Disorders of higher nervous activity. Principles of therapy for nervous disorders.	<b>3</b>  <b>11.05.26-</b> <b>16.05.26</b>
<b>32.</b>	<b>Final lesson №4 on the topics:</b> 1. Pathophysiology of the cardiovascular system. Cardiac dysfunction. 2. Circulatory disorders associated with vascular dysfunction. 3. Pathophysiology of external respiration. 4. Pathophysiology of the digestive system. 5. Pathophysiology of the liver. 6. Pathophysiology of the kidneys. 7. Pathophysiology of the endocrine system. 8. Pathophysiology of the nervous system.	<b>3</b>  <b>18.05.26-</b> <b>23.05.26</b>
	<i>TOTAL hours per semester</i>	<b>45</b>

Заведующий кафедрой нормальной и патологической физиологии

С.Н. Самусева