1. General information	
Name of the faculty	Medical
Educational program (branch, specialty, level of higher education, form of education)	22 Health care Specialty **222 "Medicine"** second (master's) level of higher education, full-time
Academic year	2023-2024
Name of discipline, code	Pathological physiology**, Kaf_pathphysiology@meduniv.lviv.ua**
Department (name, address, phone, e-mail)	Pathological physiology, 79010, Lviv, Pekarska st., 69 tel. (032) 236-84-50 , Kaf_pathphysiology@meduniv.lviv.ua
Head of the department	Regeda Mychajlo Stepanovych, MD, PhD, DSc (in Medicine), Professor, Kaf_pathphysiology@meduniv.lviv.ua
Year of study	3 year
Semester	V-VI semesters
Name of the faculty	obligatory
Teachers	Marta Kolishetska, MD, PhD marta.kolishetska@gmail.com Natalia Sementsiv, MD, PhD, nsemenciv@gmail.com Maryana Baida, MD, PhD., bayda_m@ukr.net
Erasmus yes/no	No
The person responsible for the syllabus	Natalia Sementsiv, MD, PhD Marta Kolishetska, MD, PhD Maryana Baida MD, PhD
Number of ECTS credits	7
Number of hours (lectures / practical classes / independent work of students)	34/70/106
Language of instruction	Ukrainian / English
Information for consultation	According to the schedule

2. Purpose and goals of the course

The aim of teaching the subject "Pathological physiology" is the formation of deep theoretical knowledge and practical skills for understanding the basic concepts of general nosology, the role of destructive (destructive) and protective-compensatory phenomena in the development of the disease, the analysis of typical pathological processes and their general
patterns of development, assessment of the harmful effects of environmental factors, interpretation of the basic principles of etiological and pathogenetic prevention and therapy of diseases.

Upon completion of the pathophysiology course, students should

• Understand the importance of pathophysiology for medicine and the health care system, its place in the system of medical knowledge, have an idea of its formation, the main stages of development;

• To be able to combine the achievements of clinical research and modern experimental approaches in solving current problems of etiology and pathogenesis of diseases, to have an idea of clinical pathophysiology as a modern direction of development of pathophysiological science;

• To understand the role of the experimental method in the study of pathological processes and diseases, its possibilities, limitations and prospects.

• Use knowledge of pathophysiology to analyze and assess the state of the body, disorders of its organs and systems in order to further plan diagnostic studies, treatment and preventive measures;

• Apply knowledge about "purely pathological" and "compensatory-protective" in pathogenesis, its leading and secondary links in the diagnosis and treatment of diseases, be able to distinguish sanogenetic

mechanisms from pathological ones;
• Analyze cause-and-effect relationships in pathogenesis, including through the formation of vicious circles (circulus vitiosus);

. The aim of the discipline:

Students should know:* (*Knowledge)

1. basic concepts of general nosology: health, disease, pathological process, typical pathological process, pathological reaction, pathological condition, etiology, pathogenesis;
2. the role of causes, conditions and reactivity and resistance of the organism in the occurrence, development and consequences of diseases;
3. the role of etiological factors, risk factors and conditions in the occurrence and development of diseases;
4. cause-and-effect relationships in the pathogenesis of manifestations of environmental factors (to distinguish local and general, pathological and adaptive-compensatory, specific and non-specific changes; to determine the leading link
5. typical pathological processes (cell damage, local blood circulation and microcirculation disorders, inflammation, tumors, fever, hypoxia) according to the principles of their classification, stages of pathogenesis, general manifestations and termination options;
6. causes and mechanisms of the development of typical pathological processes, their manifestations and significance for the human body, in particular in the emergence and development of relevant groups of diseases;
7. cause-and-effect relationships in the pathogenesis of typical pathological processes (changes in local and general, pathological and adaptive-compensatory, specific and non-specific; leading and auxiliary links);
8. typical disorders of metabolism (energy, carbohydrate, protein, fat, water-electrolyte, acid-base) with definition of their concepts, criteria, principles of classification and consequences, starvation;
9. etiology, pathogenesis, clinical manifestations of the main types (1st, 2nd) of diabetes and its complications;
10. causes, mechanisms of development and principles of therapy of extreme conditions: shock, collapse, coma;
11. patterns of disturbances in the cellular composition of peripheral blood in anemia, erythrocytosis, leukocytosis, leukopenia, leukemia; hemostasis disorders;
12. pathological conditions and disorders in the circulatory system: circulatory insufficiency; heart failure, cardiac arrhythmias; arterial hypertension, arterial hypotension; arteriosclerosis, atherosclerosis;
13. changes in the main parameters of cardio- and hemodynamics in heart failure (frequency and force of heart contractions, minute and systolic blood volumes, systolic, diastolic, average and pulse arterial blood pressures, venous blood pressure);
14. causes and mechanisms of development of coronary insufficiency, explain its possible consequences;
15. causes of external respiratory insufficiency, the role of alveolar ventilation disorders, gas diffusion through the alveolar-capillary membrane, perfusion in the small blood circulation in the development of respiratory insufficiency; causes and mechanisms of shortness of breath;
16. typical pathological conditions in the digestive system: insufficiency of digestion (for example, maldigestion) and malabsorption (for example, malabsorption), peptic ulcer disease of the stomach and/or duodenum as a multifactorial disease;
17. etiology, pathogenesis, clinical manifestations of liver failure, hepatic coma, jaundice, portal hypertension. Principles of prevention and treatment;
18. causes and mechanisms of violations of processes of glomerular filtration, tubular reabsorption and secretion in acute and chronic renal failure, glomerulonephritis, nephrotic syndrome, urinary syndrome, uremic coma;
19. causes and general mechanisms of the development of disorders of endocrine gland functions, primary and secondary endocrinopathies, consequences of disorders of the secretion of hormones of the adenohypophysis, neurohypophysis, adrenal glands, thyroid gland, gonads;
20. general principles of diagnosis and treatment of disorders of the endocrine system;
21. the general biological role of stress, its causes and mechanisms of development, to have an idea of the general adaptation syndrome and "adaptation diseases";
22. typical disorders of the nervous system: sensory functions, motor function, vegetative function, trophic function, and integrative function;
23. the role of acute and chronic disorders of cerebral blood circulation in disorders of the brain and the

body as a whole.

***Students must be able to*:(Skills)**

1. to solve situational problems with the determination of causal factors, risk factors, the main link of pathogenesis, stages of development, mechanisms of development of clinical manifestations, options for completion, principles of providing medical care for typical pathological processes and the most common diseases;
2. schematically display mechanisms of pathogenesis and clinical manifestations of diseases;
3. analyze and interpret the results of blood, urine, lipidogram, electrocardiogram, spirogram, immunogram, hormonal background;
4. to identify regenerative, degenerative, and pathological forms of regeneration of "red" and "white" blood cells in peripheral blood smears; interpret their presence or absence in the blood;
5. based on the results of laboratory and instrumental studies, evaluate the state of functioning of organs and systems of the body during diseases;
6. analyze various options for the development of cause-and-effect relationships in the pathogenesis of diseases;
7. be able to identify and record the leading typical pathological process, its main link and clinical signs;
8. make a reasoned decision to appoint a laboratory and/or instrumental examination;
9. determine the principles of treatment of diseases.

Have competence

• ***Integral competence:*** In accordance with the requirements of the Standard of Higher Education, discipline ensures students' acquisition of competences

Competencies and learning outcomes (general and special /professional/ competences):

General competences :

ЗК1 Ability to abstract thinking, analysis and synthesis..
ЗК2 Ability to learn and master modern knowledge.
ЗК3 Ability to apply knowledge in practical situations.
ЗК4 Knowledge and understanding of the subject area and understanding of professional activity.
ЗК5 Ability to adapt and act in a new situation.
ЗК6 Ability to make informed decisions.
ЗК7 Ability to work in a team.
ЗК8 Ability to interpersonal interaction.
ЗК9 Ability to communicate in a foreign language.
ЗК10 Ability to use information and communication technologies.
ЗК11 Ability to search, process and analyze information from various sources.
ЗК12 Determination and persistence in relation to assigned tasks and assumed responsibilities

Professional competences :

ФК1 Ability to collect medical information about the patient and analyze clinical data.
ФК2 Ability to determine the necessary list of laboratory and instrumental studies and evaluate their results.
ФК3 Ability to establish a preliminary and clinical diagnosis of the disease.
ФК6 Knowledge and understanding of the subject field and understanding of professional activity.
ФК7 Ability to diagnose emergency conditions
ФК8 Ability to determine tactics and provide emergency medical care
ФК11 The ability to solve medical problems in new or unfamiliar environments in the presence of incomplete or limited information, taking into account aspects of social and ethical responsibility
ФК17 The ability to assess the impact of the environment, socio-economic and biological determinants on the state of health of an individual, family, population.
ФК21 Clearly and unambiguously convey one's own knowledge, conclusions and arguments on health care problems and related issues to specialists and non-specialists, in particular to students
ФК24 Compliance with ethical principles when working with patients and laboratory animals.
ФК25 Observance of professional and academic integrity, bear responsibility for the reliability of the obtained scientific results

3. Course prerequisites		
The student must have basic knowledge of the following subjects: anatomy, physiology. histology, physics, biology, genetics. Pathological physiology. as an educational discipline, it is based on students' study of biology with the basics of genetics, biological physics, biological chemistry, inorganic chemistry, physiology, histology, anatomy, biochemistry, pathomorphology, pharmacology and is integrated with these disciplines. Forms an idea of the general patterns of occurrence, development and completion of various disorders of the body's vital activity. It lays the foundations for students to study clinical disciplines and pharmacotherapy, which involves the formation of skills in the application of knowledge of pathological physiology in the process of further education		
4. Program learning outcomes		
List of learning outcomes		
Code	Results	Matrix of competencies
Зн – 1,3,4 У – 1,2 К – 1 -8	Identify and identify leading clinical symptoms and syndromes, using standard methods using preliminary anamnesis data, patient examination data, knowledge about a person, his organs and systems, establish a preliminary clinical diagnosis of the disease.	ПРН - 4
Зн – 8-23 У – 3,4,5,6 К -1-11	Collect complaints, life and disease history, assess the psychomotor and mental development of an adult patient and child, the state of organs and systems of the body based on the results of laboratory and clinical studies, evaluate information about the diagnosis, taking into account the age of the patient.	ПРН - 5
Зн - 3,4,13,15 У – 1,2,3,5,6,7,8,9 К -1,3,6,8,12	To establish the final clinical diagnosis by making a reasoned decision and analyzing the received subjective and objective data of clinical and additional examination, carrying out differential diagnosis, observing the relevant ethical and legal norms, under the control of the head doctor in health care institutions.	ПРН -6
Зн – 3,4,13,15 У – 5,6,7,8,9 К -1,3,6,8,11	Assign and analyze additional methods of examination of patients with diseases of organs and systems of the body for differential diagnosis.	ПРН - 7
Зн – 1,2,3,4 У – 1,2 К -1,2,3,4,5,11,12	IDetermine the main clinical symptoms and syndromes, or what causes the severity of	ПРН - 8

	the condition (according to list 3); the victim by making a reasoned decision and assessing the person's condition under any circumstances, including in emergency situations and combat operations, in field conditions, in conditions of lack of information and limited time.	
Зн – 1,2,3,4 У – 1,2 К -1,2,3,4,5,11,12	Assess the impact of the environment on human health to assess the morbidity of the population.	ПРН -23
Зн – 1,3,4 У – 1,2 К – 1 -8	t is clear and unambiguous to convey one's own knowledge, conclusions and arguments on health care problems and related issues for specialists and non-specialists	ПРН -25
Зн – 8-23 У – 3,4,5,6 К -1-11		

6. Format and scope of the course

Course format	Full-time	
Kind of occupations	Number of hours	Number of groups
lectures	34	
practical	70	
seminars	-	
independent	106	

7. Topics and content of the course

Code of the type of classes	Topic	Content of training	Learning outcome code	Teacher
Л-1	The role of heredity, constitution, age-related changes in pathology. Reactivity pathology.	To have the basic knowledge about heredity disease. To study the causes and mechanisms of hereditary diseases. Know the characteristics of monogenic hereditary diseases. To study the mechanisms of chromosomal diseases. Know the methods of diagnosis, principles of prevention and treatment of hereditary diseases	З – 3,4 У – 1,3 К - 1,2,4,12	Natalia Sementsiv, MD, PhD, Maryana Baida, MD, PhD., Marta Kolishetska, MD, PhD

Л-2	Violation of immunological reactivity. Lack of immunity. Allergy: etiology, pathogenesis, clinical manifestations. Autoimmune diseases.	To learn the basic knowledge about immune system disorders. To know the causes, mechanisms of development, types of primary and secondary immunodeficiency states. Pathophysiological basis of organ and tissue transplantation. To study the causes and mechanisms of allergic reactions of different types. Learn the basic principles of prevention and treatment of allergic reactions	З – 3-4 У – 1-2 К - 1.2,4,12 Фк — 2.11	Natalia Sementsiv, MD, PhD, Maryana Baida, MD, PhD., Marta Kolishetska, MD, PhD
Л-3	Cell pathophysiology. General mechanisms of cell damage and death. Necrobiosis and apoptosis.	To have the basic knowledge about principles of classification cell damage. To study the universal mechanisms of cell damage. To know the consequences of cell damage. To study the mechanisms of protection and adaptation of cells to the action of harmful factors	З – 3-4 У – 1-2 К - 1.2,4,12 Фк — 17	Natalia Sementsiv, MD, PhD, Maryana Baida, MD, PhD., Marta Kolishetska, MD, PhD
Л-4	Infammation, ethiology and pathogenesis	To study the causes of the inflammatory process. To study the links in the pathogenesis of inflammation, Know the classification of mediators and their characteristics. To know the principles of anti-inflammatory therapy	З – 3-4 У – 1-2 К - 1,2.4,12 Фк - 17	Natalia Sementsiv, MD, PhD, Maryana Baida, MD, PhD., Marta Kolishetska, MD, PhD

Л-5	Tumors. Peculiarities of tumor growth. Etiology and pathogenesis of tumor growth.	To study the main groups and properties of carcinogenic factors and risk factors. Know the pathogenesis of tumor growth, as well as the interaction of tumor and organism. To study the mechanisms of antitumor protection and mechanisms of tumor evasion from immune protection.	З – 3,4 У – 1,2 К – 1,2,4-6 Фк - 17	Natalia Sementsiv, MD, PhD, Maryana Baida, MD, PhD., Marta Kolishetska, MD, PhD
Л-6	Disorders of carbohydrate metabolism. Diabetes mellitus: definition, classification, clinical manifestations and complications. Etiology, pathogenesis of the main forms of diabetes mellitus (1st and 2nd types).	To know the causes of carbohydrate metabolism disorders. To study the causes and mechanisms of type 1 and type 2 diabetes. Know the complications of diabetes. To study the basic principles of prevention and treatment of diabetes and prevention of complications	З – 2-4 У – 1,2,7 К – 1-6	Natalia Sementsiv, MD, PhD, Maryana Baida, MD, PhD., Marta Kolishetska, MD, PhD
Л-7	Pathology of water - salt metabolism. Conditions of hyper- and hypohydria. Edema: types, etiology, pathogenesis	To have knowledge about causes and mechanisms development of desorders of water-salt metabolism (hypo- and hyperhydration). To know the types of hypo- and hyperhydration, their causes and pathogenesis. To study the etiology and pathogenesis of edema. Know the causes, pathogenesis and consequences caused by changes in the concentration of sodium and	З – 3,4 У – 1,2,6.7 К – 1-6,12 ФК 7	Natalia Sementsiv, MD, PhD, Maryana Baida, MD, PhD., Marta Kolishetska, MD, PhD

		potassium ions, as well as disorders of phosphorus-potassium metabolism.		
Л-8	Violation of the acid-base state. Acidosis, alkalosis: classification, etiology, pathogenesis. Compensatory mechanisms.	To know the types of acid-base disorders, their causes and mechanisms of development. To study the role of buffer systems of blood, ion exchange, respiratory system and kidneys in the mechanisms of compensation and correction of acid-base disorders. To study the principles of pathogenetic therapy of acidosis and alkalosis.	З – 3,4,8 У – 1,5,7 К – 1,2,3,4,10-12	Natalia Sementsiv, MD, PhD, Maryana Baida, MD, PhD., Marta Kolishetska, MD, PhD
Л-9	Pathophysiology of the blood system. Anemia: principles of classification, types, etiology, pathogenesis; clinical and hematological manifestations of anemia.	To have the knowledge about causes and mechanisms of disorders of the total blood volume. To study the etiology and pathogenesis of blood loss. Know the urgent and non-urgent mechanisms of blood loss compensation. Know the principles of blood loss therapy. No study the classification of anemia. causes, mechanisms of development, typical changes in the peripheral blood of different types of anemia.	З – 3,11 У – 1,6,7,9 К -1-12	Natalia Sementsiv, MD, PhD, Maryana Baida, MD, PhD., Marta Kolishetska, MD, PhD
Л-10	Leukocytosis, leukopenia. Leukemia. Etiology, pathogenesis of leukocytosis and leukopenia. Leukemia: principles of classification, main	To study the principles of classification of leukocytosis and leukopenia. Know the causes and mechanisms of leukocytosis and	З – 3,11 У – 1,6,7,9 К - 1,2,3,4,10-12	Natalia Sementsiv, MD, PhD, Maryana Baida, MD, PhD., Marta Kolishetska, MD, PhD

	types, typical manifestations. Etiology of leukemia. Features of the pathogenesis of acute and chronic leukemia	leukopenia, types of nuclear shift of neutrophilic granulocytes. Know the etiology and pathogenesis of leukemia, the principles of their diagnosis and treatment.		
Л-11	Pathophysiology of the circulatory system. Circulatory failure. Heart failure. Coronary insufficiency: etiology, pathogenesis, consequences, clinical manifestations, myocardial infarction. Pathophysiology of blood vessels. Arterial hypertension: types, etiology, pathogenesis. Atherosclerosis: etiology, pathogenesis.	To Learn the principles of classification of circulatory failure. To study the mechanisms of development of the main clinical symptoms of chronic circulatory failure. Know the principles of classification, causes and mechanisms of heart failure. To study the etiology and pathogenesis of vascular insufficiency. To Know the risk factors for atherosclerosis,and etiology and mechanisms of hypertension.	З – 3,12-14 У – 5-9 К -1,2,3,4,6.11	Natalia Sementsiv, MD, PhD, Maryana Baida, MD, PhD., Marta Kolishetska, MD, PhD
Л-12	Pathophysiology of external respiration. Respiratory failure. Causes and mechanisms of alveolar ventilatory disorders, diffusion perfusion disorders	To learn the principles of classification of respiratory failure. To study the causes and mechanisms of alveolar ventilation, gas diffusion, pulmonary circulation. To study the violation of non-respiratory functions of the lungs.	З – 3,15 У – 5-9 К –1,2,3,6,11,12	Natalia Sementsiv, MD, PhD, Maryana Baida, MD, PhD., Marta Kolishetska, MD, PhD
Л-13	Pathophysiology of the digestive system and liver. Disorders of secretory and motor function of the digestive tract. Gastric ulcers. Digestive disorders associated	To learn causes and mechanisms of digestive disorders in the gastrointestinal tract. To know the etiology and pathogenesis of	З – 3,4,16,17 У – 6-9 К -1,2, 3,4,6,11,12	Natalia Sementsiv, MD, PhD, Maryana Baida, MD, PhD., Marta Kolishetska, MD, PhD

	with secretory insufficiency of the pancreas. Insufficiency of digestion. Hepatic failure.	peptic ulcer of the stomach and duodenum. To have the knowledge about principles of classification, etiology and pathogenesis of liver failure. Know the causes and mechanisms of portal hypertension.		
Л-14	Pathophysiology of the kidneys. Renal failure. Causes and mechanisms of glomerular filtration disorders, tubular reabsorption and secretion. Acute and chronic renal failure: criteria, causes, mechanisms, general manifestations. Glomerulonephritis. Nephrotic syndrome.	To have the knowledge about principles classification of renal failure. To study the causes and mechanisms of glomerular filtration disorders, tubular reabsorption and secretion. To know the quantitative and qualitative changes in the composition of urine. To know the etiology and pathogenesis of acute and chronic renal failure. To study the principles of treatment of renal failure	З – 3,4,18 У – 6-9 К – 1-4,6,11,12	Natalia Sementsiv, MD, PhD, Maryana Baida, MD, PhD., Marta Kolishetska, MD, PhD
Л-15	Pathophysiology of the endocrine system. General mechanisms of endocrine system disorders. Neuroendocrine disorders. Syndromes of excess or deficiency of pituitary hormones. Pathology of the adrenal glands. Pathology of the thyroid gland.	To have the basic knowledge about the causes and mechanisms of endocrine disorders. To study the disorders of endocrine regulation; synthesis, deposition and secretion of hormones; transport, their metabolic inactivation To know the principles of diagnosis and treatment of endocrine pathology.	З – 19-21 У – 6-9 К – 1-4,6,11,12	Natalia Sementsiv, MD, PhD, Maryana Baida, MD, PhD., Marta Kolishetska, MD, PhD

Л-16	Pathophysiology of the nervous system. Pecliarities of development of typical pathological processes in the nervous system. Disorders of sensory, motor and trophic functions of the nervous system. Pathogenesis of neurogenic dystrophies.	Master basic knowledge of the principles of classification of disorders of the nervous system. To study disorders of sensory information, motor, autonomic trophic and integrative functions of the central nervous system. Know the causes and mechanisms of acute and chronic disorders of cerebral circulation	З – 22-23 У – 6-9 К – 1-4,6,11,12	Natalia Sementsiv, MD, PhD, Maryana Baida, MD, PhD., Marta Kolishetska, MD, PhD
Л-17	Pathophysiology of extreme conditions.	To have the knowledge about etiology and pathogenesis of extremal states.	З – 3,10 У – 6-9 К - 3,6,11,12	Natalia Sementsiv, MD, PhD, Maryana Baida, MD, PhD., Marta Kolishetska, MD, PhD
П-1	Subject and tasks of pathophysiology. Methods of pathophysiological research. Study about disease.	To know the main tasks of pathophysiology, stages and methods of experimental modeling; classification periods of disease.	З – 1,4 У – 1-2 К - 1,2,4,	All teachers
П-2	Cell injury	To have knowledge about disturbances and influence on the organism changed due to cell injury	З – 3-4 У – 1-2 К - 1,2.4,12 Фк - 17	All teachers
П-3	Pathogenic effect of atmospheric pressure on the body.	To have knowledge about disturbances and influence on the organism changed atmospheric pressure.	З – 3-4 У – 1-2 К - 1.2,4,12 Фк — 2.11	All teachers
П-4	Pathogenic effect of ionizing radiation	To have knowledge about disorders that occur in the body when exposed to ionizing radiation.	З – 3-4 У – 1-2 К - 1.2,4,12 Фк — 17	All teachers
П-5	Role hereditary and constitution.	To know the couses and pathogenesis of hereditary desiases.		All teachers
П-6	Pahophisiology of reactivity Immune reactivity disorders.	To have the knowledge about role of reactivity and resistance in pathogenesis of diseases/. Know the causes and	З – 3,4 У – 1,2 К – 1,2,4-6 Фк - 17	All teachers

		mechanisms of immune system disorders.		
П-7	Allergy.	To know the etiology and pathogenesis of allergic diseases .	З – 2-4 У – 1,2,7 К – 1-6	All teachers
П-8	Disorderders of microcirculation	To have knowledge about types of peripheral microcirculatory disorders, their causes, mechanism of development, local manifestations.	З – 3,5,6,7 У – 1.2,6,7 К – 2,3 ФК -2.3	All teachers
П-9	Inflammation	To study the main links in the pathogenesis of inflammation. To know the principles of therapy of the inflammatory process.	З – 3-7 У – 1,2 К – 1,4 ФК – 2.3	All teachers
П-10	Fever	To know the classification of pyrogens and their role in the occurrence of fever. To study the changes in the functions of organs and systems during fever.	З – 3-7 У – 1,2,7 К – 1,3,4,6 ФК – 2.3	All teachers
П-11	Neoplasia.	To know the classification of carcinogenic factors, their properties. To study the stages of tumor development, their interaction with the body, the principles of therapy	З – 2-7 У – 1,2,6,7 К – 1,3 ФК -2,3,11,21	All teachers
П-12	Practical skills Typical pathological proceses".Starvation	To know the causes and mechanisms of peripheral circulatory disorders, inflammation, fever, tumors and starvation.To learn the types and couses of starvation, their characteristics	З – 3-7 У – 1,2,6,7 К – 1,3,4,6	All teachers
П-13	Disorders of carbohydrate metabolism. Diabetus melitus.	To know the causes of carbohydrate metabolism disorders. To study	З – 3,6,8,9 У – 1,2,5,6,7 К - 1,2,3 ФК – 2.3,7.11	All teachers

		the causes and mechanisms of type 1 and type 2 diabetes. Know the complications of diabetes. To study the basic principles of prevention and treatment of diabetes and prevention of complications		
П-14	Disorders of water-salt metabolism and metabolism of micro elements.	To have knowledge about causes and mechanisms development of desorders of water-salt metabolism (hypo- and hyperhydration).	З – 3,8 У – 1,5,7 К – 1,2,4- ФК – 2.3,7.11	All teachers
П-15	Disorders of Acide-bace balance .	To know the types of acid-base disorders, their causes and mechanisms of development. To study the role of buffer systems in the mechanisms of compensation and correction of acid-base disorders.	З – 3,8 У – 1,5,7 К -1,2,4 ФК – 2.3,	All teachers
П-16	Pathophysiology of the blood system. Anemia caused by blood loss	To take the basic knowledge about the violation of the total blood volume. To study the qualitative and quantitative changes of erythrocytes. To know the hematological characteristics of acute and chronic anemia.	З – 3,7,11 У – 1,6,7,9 К -3,6,9,11 Фк – 2,3,7,11,	All teachers
П-17	Hemolytic anemias and anemias caused by erythropoiesis disorders.	To have the basic knowledge about the causes, pathogenesis, hematological characteristics of acquired and hereditary hemolytic and Diserythropoietic anemias.	З – 3,7,11 У – 1,6,7,9 К -3,6,9,11 Фк – 2,3,7	All teachers
П-18	Leukocytosis, leukopenia, leukemia.	To study qualitative and quantitative changes of leukocytes, their	З – 3,7,11 У – 1,6,7,9 К - 2,3,4,9,	All teachers

		etiology and pathogenesis. Know the theories of origin, mechanisms of development and hematological characteristics of different types of leukemia.	Фк – 2,3,7,11	
П-19	Disorders of hemostasis	To study the types, causes, mechanisms and consequences of disorders of the hemostasis system. To study the etiology and pathogenesis of DIC syndrome.	З – 3,7,11 У – 1,4,6,7,9 К – 2,3.6,9 Фк – 2,3,7,11	All teachers
П-20	Practical skills Blood disorders	To know the causes, mechanisms of development and hematological characteristics of anemia, leukemia and hemostasis.	З – 3,7.11 У – 1,4,5,6,7 К – 2,3,4,6,9,12 Фк – 2,3,7,11	All teachers
П-21	Pathophysiology of coronary circulation. Pathophysiology of the heart. Heart failure.	To learn the basic knowledge about the types, causes and mechanisms of circulatory failure. To know the classification of heart failure, causes, mechanisms of development and compensation	З – 3,12,13,14 У – 1,3,5-9 К -1,3,4,6,9,11 Фк – 2,3,7,11,21	All teachers
П-22	Pathology of blood vessels	To take the knowledge of risk factors in the development of vascular insufficiency. To know the etiology and pathogenesis of atherosclerosis, hyper- and hypotension.	З – 3,12,13,14 У –1, 3,5-9 К -1,3,4,6,9,11 Фк – 2,3,7,11	All teachers
П-23	Pathophysiology of external respiration. Respiratory failure.	To study the types, causes and mechanisms of external respiratory failure. To know the changes in the gas composition of blood in different types respiratory insufficiency	З – 4,15 У – 1,5-9 К – 3,6,9,11,12 Фк – 2,3,7,11,21	All teachers
П-24	Hypoxia.	To learn the basic knowledge of the principles of classification of hypoxia, their etiology,	З – 3,15 У – 1,5-9 К – 3,6,9,11,12 Фк – 2,3,7,11	All teachers

		pathogenesis and changes in blood gas composition. To know the mechanisms of compensation in acute and chronic hypoxia.		
П-25	Pathophysiology of the digestive system. Insufficiency of digestion	To study the causes and mechanisms of disorders in different parts of the gastrointestinal tract, their manifestations	З – 3,16, У – 6-9 К - 3,6,9,11,12 Фк – 2,3,7,11,21	All teachers
П-26	Pathophysiology of liver. Liver insufficiency	To learn the basic knowledge of the principles classification of liver failure, causes and mechanism of their development.	З - 3,17 У – 6-9 К - 3,6,9,11,12 Фк – 2,3,7,11,21	All teachers
П-27	Pathophysiology of kidneys. Kidneys insufficiency	To know the types, causes and mechanisms of renal failure, quantitative and qualitative changes in the composition of urine.	З – 3,18 У – 6-9 К - 3,6,11,9,12 Фк – 2,3,7,11,21	All teachers
П-28	Practical skills on "Pathophysiology of digestion, liver, kidneys."	To know the etiology, pathogenesis and manifestations of indigestion, liver and kidney failure.	З – 3,16,17,18 У – 6-9 К - 3,6,11,9,12 Фк – 2,3,7,11,21	All teachers
П-29	Pathophysiology of the endocrine system.	To learn the causes and mechanisms of endocrinopathies. To study the dysfunction of the endocrine glands.	З – 3,19,20,21 У – 6-9 К - 3,6,11,9,12 Фк – 2,3,7,11,21	All teachers
П-30	Pathophysiology of the nervous system.	To take the basic knowledge about causes of central nervous system dysfunction and their manifestations..	З – 3,22,23 У – 6-9 К - 3,6,11,9,12 Фк – 2,3,7,11,21	All teachers
П-31	Pathophysiology of extreme conditions ..	To know the basic types of extreme conditions. To study the types, causes and mechanisms of shock, collapse and coma.	З – 3,10 У – 6-9 К - 3,6,11,12 Фк -2,3,7,11,21	All teachers
СРС-1	Subject and tasks of pathophysiology. Methods of pathophysiological research.	Modern scientific schools, the main directions of their activity.	З – 1,3,4-12 У – 1-2 К - 1,2,4	All teachers
СРС-2	Pathogenic effect of altered atmospheric	To study the disorders that occur	З – 3-4 У – 1-2	All teachers

	pressure on the body.	when exposed to altered atmospheric pressure	К - 1.2,4,12 Фк - 17	
СРС-3	Pathogenic effect of ionizing radiation on the body.	Pathogenic effect of ionizing radiation on the body. To study the pathogenic effect of radiant energy of infrared and ultraviolet spectr.	З – 3-4 У – 1-2 К - 1,2.4-7 Фк - 19	All teachers
СРС-4	The role of heredity, constitution, age-related changes in pathology	To know the classification types of constitution. Aging.	З – 3,4 У – 1,2 К – 1-6 Фк - 19	All teachers
СРС-5	Reactivity pathology. Violation of immunological reactivity.	To study the pathophysiological basis of organ and tissue transplantation. Immunological relationships in the "mother-fetus" system.	З – 2-4 У – 1-7,11-12 К – 1-4	All teachers
СРС-6	Allergy.	To have the relationship between allergy, immunity and inflammation.	З – 3,4 У – 1-4,6.7,12 К – 1.3.6	All teachers
СРС-7	Practical skills on the topic “General nosology. Pathogenic action of environmental factors. The role of internal factors in pathology.	To study the influence of environmental factors on the body	З – 1-4 У – 1,2,6,7 К -1,2,4,14 Фк - 17	All teachers
СРС-8	Disorders of peripheral blood circulation and microcirculation..	To learn the typical microcirculation disorders. Know intravascular and extravascular disorders of microcirculation	З – 3,4,5 У – 1.2 К – 1-4.6,12	All teachers
СРС-9	Inflammation	To know the role of body reactivity, pathological immune response in the development of inflammation. The role of cytokines.	З – 3,5,6,7 У – 1.2,6,7 К –1 2,3,4,6,12 ФК 2-3	All teachers
СРС-10	Fiver	To analyze the influence of nervous and endocrine and immune systems on the mechanism of fiver.	З – 3,5,6,7 У – 1,2 К – 1,4 ФК 2-3	All teachers
СРС-11	Neoplasia	To study the general characteristics of the main types of tissue growth disorders.	З – 3-7 У – 1,2,7 К – 1,3,4,6 ФК 2-3	All teachers

CPC-12	Starvation	To learn the factors that affect the body's resistance to starvation.	З – 2-7 У – 1,2,6,7 К – 1,3 ФК 2-3	All teachers
CPC-13	Practical skills on the topic “Typical pathological processes ”.	To study typical pathological processes and their impact on the body.	З – 3-7 У – 1,2,6,7 К – 1,3,4,6	All teachers
CPC-14	Disorders of carbohydrate metabolism. Diabetus mellitus.	To study modeling of diabetes mellitus and prevention of its complications	З – 3,6,8,9 У – 1,2,5,6,7 К - 1,2,3 ФК 2-3	All teachers
CPC-15	Disorders of water-salt metabolism	To study the hyper- and hypocalcemic conditions..	З – 3,8 У – 1,5,7 К – 1,2,4- ФК2-3	All teachers
CPC-16	Acid-base disorders.	To know the relationship between the acid-base state and disorders of electrolyte metabolism.	З – 3,8 У – 1,5,7 К -1,2,4	All teachers
CPC-17	Pathophysiology of the blood system. Anemia caused by blood loss.	To interpret the physiological processes caused by blood loss. Hemorrhagic shock.	З – 3,7,11 У – 1,6,7,9 К -3,6,9,11 Фк – 2,3.6,7,11	All teachers
CPC-18	Hemolytic anemias and anemias caused by erythropoiesis disorders.	To study the clinical manifestations of erythrocyte hemolysis.	З – 3,7,11 У – 1,6,7,9 К -3,6,9,11 Фк – 2,3.6,7,11	All teachers
CPC-19	Leukocytosis, leukopenia. Leukemia..	To study the etiology and pathogenesis of hereditary disorders of the structure and function of leukocytes.	З – 3,7,11 У – 1,6,7,9 К - 2,3,4,9, Фк – 2,3.6,7,11	All teachers
CPC-20	Disordes of hemostasis.	To learn the hemostasis disorders.	З – 3,7,11 У – 1,6,7,9 К - 2,3,4,9, Фк – 2,3.6,7,11	All teachers
CPC-21	Practical skills on the topic "Pathophysiology of blood".	To be able to decipher the blood formula. Understand the development of symptoms and syndromes in blood pathology.	З – 3,7,11 У – 1,6,7,9 К - 2,3,4,9, Фк – 2,3.6,7,11	All teachers
CPC-22	Pathophysiology of systemic circulation. Circulatory failure. Pathophysiology of the heart. Heart failure.	To explain the clinical and laboratory criteria, manifestations and complications of myocardial infarction. Principles of cardioprotection	З – 3,12,13,14 У – 1,3,5-9 К -1,3,4,6,9,11 Фк – 2,3.6,7,11,21	All teachers

		and treatment.		
CPC-23	Pathophysiology of blood vessels	To study the primary hypertension as a multifactorreal disease.	З – 3,12,13,14 У – 1,3,5-9 К -1,3,4,6,9,11 Фк – 2,3.6,7,11	All teachers
CPC-24	Pathophysiology of external respiration. Respiratory failure. Hypoxia.	To take the knowledge about disorders of non-respiratory lung function	З – 3,4,15 У – 1,5-9 К – 3,6,9,11,12 Фк – 2,3.6,7,11.21	All teachers
CPC-25	Pathophysiology of the digestive system. Insufficiency of digestion.	To analyze the ethiopathogemesis of enzymopathy	З – 3,16, У – 6-9 К - 3,6,9,11,12 Фк – 2,3.6,7,11	All teachers
CPC-26	Pathophysiology of the liver. Hepatic failure.	To know the etiologpatogenesis oy, pathogenesis and manifestations of portal hypertension To learn the pathogenesis of ascites	З – 3,17 У – 6-9 К - 3,6,9,11,12 Фк – 2,3.6,7,11	All teachers
CPC-27	Pathophysiology of the kidneys. Renal failure.	To learn the principles of treatment renal failure. The concept of extracorporeal and peritoneal hemodialysis, lymphodialysis	З – 3,19 У – 6-9 К - 3,6,9,11,12 Фк – 2,3.6,7,11	All teachers
CPC-28	Practical skills on "Pathophysiology of digestion, liver, kidneys."	To study the symptoms of pathology of the abdominal cavity.	З – 3,16,17,18,19 У – 6-9 К - 3,6,9,11,12 Фк – 2,3.6,7,11	All teachers
CPC-29	Pathophysiology of the endocrine system.	To explain the concept of stress as a non-specific, adaptive response of the body to the action of extraordinary stimuli	З – 3,20,21 У – 6-9 К - 3,6,9,11,12 Фк – 2,3.6,7,11	All teachers
CPC-30	Pathophysiology of the nervous system.	To study the role of neuroglia damage in the development of pathological processes in the CNS. Damage to the blood-brain barrier and autoimmune lesions of the brain.	З – 3,22,23 У – 6-9 К - 3,6,9,11,12 Фк – 2,3.6,7,11	All teachers
CPC-31	Pathophysiology of extreme conditions.	To learn the crush syndrome: causes, mechanisms of development, manifestations.	З – 3,10 У – 6-9 К - 3,6,11,12 Фк – 2,3.6,7,11	All teachers
CPC-32	Pathogenic effect of infrared and ultraviolet rays. Damage caused	To study the pathogenic effects of infrared and	З – 3-4 У – 1-2	All teachers

	by ultra-high frequency radio waves.	ultraviolet radiation Photosensitization tion. The mechanism of development of disturbances which are caused by radio waves	К - 1,2.4,12 Фк - 17	
СРС-33	Pathogenic effect of electric current. Influence of space flight factors on the body.	To study the factors that determine the nature of lesions under the action of electric current. Mechanisms of influence on the body of acceleration and weightlessness.	З – 3-4 У – 1-2 К - 1,2.4,12 Фк - 17	All teachers
СРС-34	Chemical pathogenic factors. Intoxication. Natural mechanisms of protection against toxins and poisons.	To know chemical factors as a problem of ecology and medicine. Exo- and endo-intoxication. Natural mechanisms of protection against to toxins.	З – 3,4 У – 1,2,5,6.9 К - 1,3,6	All teachers
СРС-35	Pathophysiological aspects of alcoholism, drug addiction, substance abuse	To explain the harmful effects of alcohol, drugs and toxic substances on the human body. The mechanism of their action, manifestations.	З – 3,4 У – 1,2.5,6.9 К - 1,3,6	All teachers
СРС-36	General patterns of development of the infectious process. The role of pathogen properties and reactivity of the organism in the mechanisms of development infectious diseases.	To learn the classification of infectious agents. To know the mechanisms of infectious diseases. Distribution and dissemination of infectious agents in the body.	З – 2,3,4 У – 1,6,8,9 К - 1.2,3,6	All teachers
СРС-37	Aging: general features, theories. Aging and disease. Theoretical foundations of life expectancy.	To know the factors that determine the specific, individual and midle life expectancy. Structural, functional and biochemical manifestations of aging. Methods of geroprotection.	З – 2,4,7 У – 1,3,6 К – 1.4,12	All teachers
СРС-38	Cell pathophysiology. Cell injury	To describe the principles of classification of cell damage. To study the causes and mechanisms of cell damage.	З – 3-6 У – 1,6,7 К – 1,3	All teachers

		Mechanisms of protection and adaptation of cells to the action of harmful agents		
CPC-39	Disruption of cell energy supply. Disorders of cellular respiration. The role of energy metabolism disorders in cell life / damage.	To interpret the mechanism of basic metabolism as a factor influencing the energy balance. Disruption of cell energy supply. The role of energy supply disorders in the mechanism of their damage.	З – 3-6 У – 1,6,7 К – 1,3	All teachers
CPC-40	Disorders of lipid metabolism	To explain etiology, pathogenesis of primary and secondary dyslipoproteinemia s, their consequences.	З – 3,8 У – 1-3,6,7 К – 1-3	All teachers
CPC-41	Disorders of protein metabolism. Disorders of metabolism of purine and pyrimidine bases.	To describe the violation of the main stages of protein metabolism. Causes of disorders of blood protein composition. Hereditary disorders of amino acid metabolism.	З – 3,8 У – 1-3,6,7 К - 1-3	All teachers
CPC-42	Vitamins disorders	To take the knowledge of the causes and mechanisms of hypo- and hypervitaminosis.	З – 3,8 У – 1-3,6,7 К – 1-3	All teachers

8. Verification of results

Current control

Learning outcome code	Code type to borrow	Method of verifying learning outcomes	Enrollment criteria
З – 1,3,4 У – 1-2 К - 1,2,4	П-1; СРС-1; Л-1.	Written tests, oral examination, solving clinical cases	Evaluation: Oral interview: Test control: 80% and > - passed, < 80% - not counted Situational tasks (includes three questions): "excellent" - gave correct, complete answers to 3 control questions; "good" - gave correct, complete answers to 2 control questions and one incomplete or inaccurate answer - to the third; "satisfactory" - gave a correct answer to one control question and two incomplete or inaccurate answers - to two questions. Practical experience:

			Credited / not credite
З – 3-4 У – 1-2 К - 1.2,4,14 Фк - 17	П-2; СРС-2.	Written tests, oral examination, solving clinical cases	
З – 3-4 У – 1-2 К - 1,2.4,14 Фк - 17	П-3; СРС-3.	Written tests, oral examination, solving clinical cases Creating a model of hypobaria.	
З – 3,4 У – 1,2 К – 1,2,4 Фк - 17	П-4; СРС-4.	Written tests, oral examination, solving clinical cases Creation models photosesibilisation.	
З – 2-4 У – 1,2,7 К – 1-4	П-5; СРС-5; Л-2.	Written tests, oral examination, solving clinical cases Determination of the Kongorot index.	
З – 3,4 У – 1,2,6.7 К – 1.3.6	П-6; СРС-6; Л-2.	Written tests, oral examination, solving clinical cases Creation models of anaphylactic shock.	
З – 3,4,5 У – 1.2 К – 3,4	П-7; СРС-7.	Written tests, oral examination, solving clinical cases Creating a model of arterial hyperemia and ischemia.	
З – 3,5,6,7 У – 1.2,6,7 К – 2,3	П-8; СРС-8; Л-4.	Written tests, oral examination, solving clinical cases Determination of amylo- and proteolytic activity of exudate. Testing of Rivalt and Sokhansky	
З – 3-7 У – 1,2 К – 1,4	П-9; СРС-9.	Written tests, oral examination, solving clinical cases	
З – 3-7 У – 1,2,7 К – 1,3,4,6	П-10; СРС-10; Л-5.	Written tests, oral examination, solving clinical cases	
З – 2-7 У – 1,2,6,7 К – 1,3	П-11; СРС-11.	Written tests, oral examination, solving clinical cases	
З – 3-7 У – 1,2,6,7 К – 1,3,4,6	П-12; СРС-12.	Written tests, oral examination, solving clinical cases	
З – 3,6,8,9 У – 1,2,5,6,7 К - 1,2,3	П-13; СРС-13; Л-6.	Written tests, oral examination, solving clinical cases	
З – 3,8 У – 1,5,7 К – 1,2,4-	П-14; СРС-14; Л-7.	Written tests, oral examination, solving clinical cases Reproduction of pulmonary edema.	

З – 3,8 У – 1,5,7 К -1,2,4	П-15; СРС-15; Л-8.	Written tests, oral examination, solving clinical cases.
З – 3,7,11 У – 1,6,7,9 К -3,6,9,11 Фк – 2,3.6,7,11	П-16; СРС-16; Л-9.	Written tests, oral examination, solving clinical cases Study of blood smears
Зн- З – 3,7,11 У – 1,6,7,9 К -3,6,9,11 Фк – 2,3.6,7,11	П-17; СРС-17; Л-9.	Written tests, oral examination, solving clinical cases Study of blood smears.
З – 3,7,11 У – 1,6,7,9 К -3,6,9,11 Фк – 2,3.6,7,11,21	П-18; СРС-18; Л-10.	Written tests, oral examination, solving clinical cases Study of blood smears
Зн- З – 3,7,11 У – 1,6,7,9 К -3,6,9,11 Фк – 2,3.6,7,11	П-19; СРС-19.	Written tests, oral examination, solving clinical cases
Зн- З – 3,7,11 У – 1,6,7,9 К -3,6,9,11 Фк – 2,3.6,7,11	П-20; СРС-20.	Written tests, oral examination, solving clinical cases
З – 3,12,13,14 У – 1,3,5-9 К -1,3,4,6,9,11 Фк – 2,3.6,7,11	П-21; СРС-21; Л-11.	Written tests, oral examination, solving clinical cases
З – 3,12,13,14 У –1, 3,5-9 К -1,3,4,6,9,11 Фк – 2,3.6,7,11,21	П-22; СРС-22; Л-11.	Written tests, oral examination, solving clinical cases
З – 4,15 У – 1,5-9 К – 3,6,9,11,12 Фк – 2,3.6,7,11	П-23; СРС-23; Л-12.	Written tests, oral examination, solving clinical cases
З – 3,15 У – 1,5-9 К – 3,6,9,11,12 Фк – 2,3.6,7,11	П-24; СРС-23; Л-12.	Written tests, oral examination, solving clinical cases
З – 3,16, У – 6-9 К - 3,6,9,11,12 Фк – 2,3.6,7,11	П-25; СРС-24; Л-13.	Written tests, oral examination, solving clinical cases Determination of gastric acidity.
З - 3,17 У – 6-9 К - 3,6,9,11,12 Фк – 2,3.6,7,11,21	П-26; СРС-25; Л-13.	Written tests, oral examination, solving clinical cases
З – 3,19 У – 6-9 К - 3,6,9,11,12 Фк – 2,3.6,7,11	П-27; СРС-26; Л-14.	Written tests, oral examination, solving clinical cases Qualitative and quantitative method of protein in urine.
З – 3,16,17,18 У – 6-9	П-28; СРС-27.	Written tests, oral examination, solving

К - 3,6,11,9,12 Фк – 2,3.6,7,11		clinical cases
З – 3,19,20,21 У – 6-9 К - 3,6,11,9,12 Фк – 2,3.6,7,11,21	П-29; СРС-28; Л-15.	Written tests, oral examination, solving clinical cases
З – 3,22,23 У – 6-9 К - 3,6,11,9,12 Фк – 2,3.6,7,11,21	П-30; СРС-29; Л-16.	Written tests, oral examination, solving clinical cases
З – 3,10 У – 6-9 К - 3,6,11,12 Фк – 2,3.6,7,11	П-31; СРС-30; Л-17.	Written tests, oral examination, solving clinical cases

Final control

General scoring system	Participation in the work during the semester / exam - 60% / 40% due to a 200-point scale	
Scoring scale	Traditional 4-point scale, multi-point (200-point) scale, ECTS rating scale	
Rules of exam admission	The student attended all practical (laboratory, seminar) classes and received at least 120 points for the current academic performance	
Type of final control	Methods of final control	Enrollment criteria
Credit	All topics submitted for current control must be included. Grades from a 4-point scale are converted into points on a multi-point (200-point) scale in accordance with the Regulation "Criteria, rules and procedures for evaluating the results of students' educational activities"	The maximum number of points is 200. The minimum number of points is 120

<table>
<tr><th colspan="3">Exam evaluation criteria</th></tr>
<tr><td>Exam
Exam evaluation criteria</td><td>Terms of final control(online form)The exam is conducted in written form according to the schedule and includes 80 test tasks with a weight of 1 point each. The form of the examination should be standardized and include control of theoretical and practical training.
The maximum number of points that a student can score when taking the exam is 80. MCQs according to the complexity level:
1) 40 MCQs of the first complexity level that have five options, one of which is correct (one correct answer = 1 point);
2) 40 MCQs of the second complexity level: that have (in example)six options or more, In example :three of which are correct; each correct option equals 0.3333 points (1 correct answer = 0.3333 points, 2 correct answers = 0.6666 points, 3 correct answers = 1 point, but if one of the incorrect options is chosen, the whole question is marked as 0 points regardless of the other options chosen);
Note: please remember that even one incorrect option chosen alongside one (or two) correct ones will result in the whole question being marked as 0 points
Terms of final control(ofline form)
Final control consists of the following stages:
Stage 1 - a written response to the tests of format (blank control). The student is responsible for 25 tests format of the themes of each semantic module, which are part of the final module.
Phase II - a written response. The student is responsible for 5 theoretical issues in ticket
Phase II - a written response.Demonstration of practical skills complite caseses .</td><td>The grade for the discipline, which ends with an exam, is defined as the sum of points for the current educational activity (not less than 72) and points for the exam (not less than 50 points).
From 170 to 200 points - excellent;
From 140 to 169 points - good;
From 139 points to 122 - satisfactory;
Below the minimum number of points that a student must score (<50) - unsatisfactory.</td></tr>
</table>

The maximum number of points that a student can score for the current academic activity for admission to the exam (differentiated test) is 120 points. The minimum number of points that a student must score for the current academic activity for admission to the exam (differentiated test) is 72 points. The calculation of the number of points is based on the grades obtained by the student on a 4-point (national) scale during the study of the discipline, by calculating the arithmetic mean (CA), rounded to two decimal places. The resulting value is converted into points on a multi-point scale as follows:
$x = CA \times 120/5$

9. Course policy

Indicates academic integrity policies, program-specific policies relevant to the course

10. Literature

Required

1. Ataman O. B. Pathophysiology: textbook. for students higher honey. education closing In 2 volumes, T. 1: General pathology / O. B. Ataman. - - 2nd edition. - Vinnytsia: New Book, 2016. - 580 p.
2. Ataman O. B. Pathophysiology: subed. for students higher honey. education closing In 2 vols. T. 2: Pathophysiology of organs and systems / O. B. Ataman. - 2nd edition. - Vinnytsia: New book, 2016. - 448 p.
3. Ataman O. V. Pathological physiology in questions and answers: study guide / O. V. Ataman. - 5th type. - Vinnytsia: New book, 2017. - 512 p.
4. Pathological physiology: Textbook. / Under the editorship of M.S. Regeda, A.I. Bereznyakov. - Second edition with supplement. and processing Lviv, 2011. - 490 p.
5. Pathophysiology: subclass. for students higher honey. education closing / Yu. V. Byts, H. M. Butenko [and others] ; edited by: M. N. Zayka, Yu. V. Bytsia, M. V. Kryshtalya. - 6th ed., revised. and added - Kyiv: Medicine, 2017. - 737 p.
6. General and clinical pathophysiology: textbook for students of higher educational institutions, of IV th level of accreditation / A. V. Kubyshkin [et al.] ; ed. by: A. V. Kubyshkin, A. I. Gozhenko; rec.: N. V. Krishtal, N. K. Kazimirko. - 3rd ed. - Vinnytsya : Nova Knyha Publishers, 2020. - 656 p.
7. Pathophysiology=Pathophysiology: a textbook for med. University of the 4th year of a. Approved by the Ministry of Education and Culture / edited by M.V. Krystalya, V.A. Mikhneva. - Kyiv: Medicine, 2020. - 656 p.
8. Simeonova N. K. Pathophysiology: textbook for students of higher medical educational institutions of the III-IV accreditation levels / N. K. Simeonova; ed. by V. A. Mikhnev. - 3rd ed. - Kyiv: AUS Medicine Publishing, 2017. - 544 p.
9. Lecture materials.

Additional

1. Biological and bioorganic chemistry: in 2 books. – Book 2. Biological chemistry: textbook (University of the IV year) / I.Yu. Gubskyi, I.V. Nizhenkovska, M.M. Korda and others; under the editorship Yu.I. Gubskyi, I.V. Nizhenkovskaya. – 2nd ed., corr. - K.: Medicine, 2017. - 544 p.
2. Bodnar P.M. Endocrinology. Vinnytsia, New Book, 2016 - 344 p.
3. V.V. Chopyak Clinical immunology and allergology: textbook (University III-IV years) / V.V. Chopyak, G.O. Potemkina, A.M. Gavrylyuk and others. – Lviv: Medicine, 2017. – 224 p.
4. Iron deficiency conditions in children - Shumatova T.A., Ni A., Shishatskaya S.N. – 2016.- 69 p.
5. Endocrinology: Nat. handyman higher honey. education closing 4th year of accreditation / Under the editorship P.M. Bodnara /Bodnar P.M., Mikhalchyshyn G.P., Komisarenko Y.I., Prystupnyuk O.M., Bolshova O.V./. - 4th edition. update and added - Vinnytsia: New book, 2017. - 456 p.
6. Ionov I.A. Modern immunology (course of lectures) / I.A. Ionov, T.E. Komisova, O.M. Sukach, O.O. Katerynych O Kh.: Kharkiv: 2017. - 107 p.
7. Fundamentals of pathology according to Robbins: in 2 volumes. Volume 1 / Vinay Kumar, Abul K. Abbas, John C. Astaire; scientific editors of the translation I. Sorokina, S. Hychka, I. Davydenko; translation of the 10th Eng. edition. - K.: Medicine, 2019. - 420 p.
8. Regeda M.S., Boychuk T.M., Bondarenko Yu.I., Regeda M.M. Inflammation is a typical pathological process. Second edition - Lviv, "Spolom". - 2013. - 149 p.
9. Chesnokova N.P., Nevvazai T.A., Ponukalina E.V., Zhevak T.N., Polutova N.V., Bizenkova M.N. Lecture 1 Leukopenia: general characteristics, etiology, pathogenesis, features of hematological shifts // International Journal of Experimental Education. - 2015. - No. 7. - P. 178-180.
10. Endocrinology. Textbook: P.N. Bodnar, H.P. Mikhalchyshyn, Yu.I. Komissarenko and others. Edited by: Prof. P.N. Bodnara. - Vinnitsa. New Book, 2015. – 496 p.
11. Kumar V. Robbins and Cotran Pathologic Basis of Disease. Vol. I / V. Kumar, A. K. Abbas, J. C. Aster. - India: Elsevier, 2015. - 1391 p.
12. Pathophysiology: The Biological Basis of Disease in Adults and Children / ed. by K. L. McCance, S.E. Huether. - 8th ed. - Mosby, 2017. - 1840 p.
13. Endocrinology: textbook for students of higher medical institutions with the 4th level of acc. (MHU) / ed. by P.M. Bodnar. - 3rd ed., updated. - Vinnytsia: Nova Knyha, 2016. - 328 p.

11. Equipment, logistical and software support of the discipline / course
Goryaev chamber Sally hemometer Medical weight scales; Microscope. Centrifuge, Quartz lamp, Distiller, Thermostat Tripods, Test tubes, pipettes, Flasks, Cylinders, Funnels, Thermometers, Scales; Computers, Laptops, Multimedia projector MISA Moodle for computerized testing online 2018. IFOM. Software, 2018.
12. Additional information
All other information important for the student, which is not included in the standard description, for example, contact data of the person responsible for the educational process at the department, information about the scientific circle of the department, information about class routes, information about the need to equip oneself with personal protective equipment; information about the place of classes; links to website / department pages, etc Responsible persons for the educational process at the department: Marta Kolishetska, MD, PhD marta.kolishetska@gmail.com Natalia Sementsiv, MD, PhD, nsemenciv@gmail.com Maryana Baida, MD, PhD., bayda_m@ukr.net **Kaf_pathphysiology@meduniv.lviv.ua**

Syllabus compliers: Professor KolishetskaM.A., MD, PhD

Syllabus compliers: Associate Professor Sementsiv N.G., MD, PhD

Syllabus compliers: Associate Professor BaidaM.L, MD, PhD

Head of Pathophysiology Department Professor Regeda M.S., MD, PhD.