MINISTRY OF HEALTH OF UKRAINE
NATIONAL UNIVERSITY OF PHARMACY
Department of Physiology and Pathological physiology

PATHOLOGICAL PHYSIOLOGY OF DISEASES OF CIVILIZATION

(назва освітньої компоненти)

WORK PROGRAM
of educational component

training for **Master**
(Higher Educational Level Name)
in specialty **226 Pharmacy, industrial pharmacy**
(Code and Specialty Name)
field of knowledge «**22 Publik Health**
(Code and Knowledge Field Name)
of educational program **Pharmacy for foreign students**
(Educational Program Name)
in specialization(s)_____
(Code and Specialization Name)

2022

The work program of educational component "Pathological physiology of diseases of civilization", in specialty "226 Pharmacy, industrial pharmacy", educational program "Pharmacy for foreign students" for applicants for higher education 3 year of study.

EDUCATIONAL COURSE TEAM:

KONONENKO Nadiia, head of the Department of Physiology and Pathological physiology, MD, Professor

CHIKITKINA Valentyna, associate professor of the Department of Physiology and Pathological physiology, MD, associate professor

Work program has been considered and approved at the Department meeting of the department of Physiology and Pathological physiology
Record from «02» September 2022 № 2

Head of the Department of Physiology and Pathological Physiology — Prof. Nadiia KONONENKO

Work program has been approved at the meeting Methodical Commission of biomedical sciences
Record from «12» September 2022 № 1

Head of Specialized Committee — Prof. Nadiia KONONENKO

1. Description of the educational component

Language of study: English
Status of the educational component: selective
Prerequisites for studying the educational component: the study of the educational component "Pathological Physiology of Diseases of Civilization" forms the ability of higher education students to interpret the causes, mechanisms of development and manifestations of the most common diseases of civilization, to analyze, draw conclusions about the causes and mechanisms of functional, metabolic, structural disorders of organs and body systems in these diseases; provides fundamental training and acquisition of practical skills for the subsequent professional activity of a specialist in the pharmaceutical industry.
The subject of educational component study "Pathological Physiology of Diseases of Civilization" is the general laws of functioning of the patient's body that occur at the level of cells, organs, systems and the patient's body as a whole; determining the mechanisms of resistance and pre-disease, the occurrence and course of certain diseases of civilization and their consequences.
Information content of the educational component. _3_ECTS credit _90__hours are assigned to the study of the educational component.

2. Objectives and tasks of the educational component

The purpose of teaching the educational component «Pathological Physiology of Diseases of Civilization" is the study of the causes and conditions of the most common diseases of civilization and the determination of the leading mechanisms of their development and individual manifestations at different levels of organization of living objects - from the molecular level to the organism as a whole.

The main tasks of the educational component "Pathological Physiology of Diseases of Civilization" are:

- to study the causes, mechanisms of occurrence, development, course and consequences of major diseases of civilization;
- to find out the disorders of vital processes and the possibility of influencing them in the event of diseases of civilization.
- to create a framework that determines the professional competence and general erudition of specialists.

3. Competence and planned educational outcomes

Educational component «_____» ensures the acquisition of applicants for higher education the following **competences**:

integrative:

- the ability to solve typical and complex specialized tasks and practical problems in professional pharmaceutical activity in the health care sector on a socially oriented basis or in the process of training, which involves chemical, biopharmaceutical, biomedical, sociological and other research and/or innovation and is characterized by uncertainty of conditions and requirements; integrate knowledge, critically comprehend and solve complex issues, make decisions in difficult unpredictable conditions, formulate judgments in the presence of incomplete.

general:

GC 2. Ability to apply knowledge in practical situations, make reasonable decisions.
GC 4. Ability to abstract thinking, analysis and synthesis, to learn and be modernly trained.
GC 6. Knowledge and understanding of the subject area and understanding of professional activity.
GC 12. Ability to conduct research at the appropriate level.

professional (special):

PC 1. Ability to conduct sanitary and educational work among the population to prevent common diseases, prevent dangerous infectious, viral and parasitic diseases, as well as to facilitate the timely detection and maintenance of adherence to treatment of these diseases in accordance with their medical and biological characteristics and microbiological characteristics.
PC 3. Ability to provide the first aid to patients and victims in extreme situations and emergencies.

PC 4. Ability to ensure the rational use of prescription and over-the-counter medications and other pharmaceutical products in accordance with physicochemical, pharmacological characteristics, biochemical, pathophysiological features of a particular disease and pharmacotherapeutic regimens for its treatment.

Integrative final program learning outcomes (PLO), the formation of which is facilitated by the educational component:
PLO 1. To carry out professional activities in social interaction based on humanistic and ethical principles; to identify future professional activities as socially significant for human health.
PLO 2. To apply knowledge of general and professional disciplines in professional activities.
PLO 4. To demonstrate the ability to independently search, analyze and synthesize information from various sources and use these results to solve typical and complex specialized tasks of professional activity.
PLO 12. To analyze the information obtained as a result of scientific research, summarize, systematize and use it in professional activities.
PLO 15. To provide home care to patients in emergencies and victims in extreme situations.
PLO 16. To determine the influence of factors influencing the processes of absorption, distribution, deposition, metabolism and excretion of the drug and due to the condition, features of the human body and physico-chemical properties of medications.

As a result of studying the educational component, the applicant for higher education will be
know:
- diseases of civilization, their features and impact on the patient;
- causes, mechanisms, most important manifestations and consequences of major diseases of civilization;
- basic principles of prevention and therapy of these diseases;
- main perspective directions of development of pathological physiology.

be able to:
- to solve situational problems with the definition of causal factors, risk factors, the main link of pathogenesis, stages of development, mechanisms of development of clinical manifestations, options for completion, principles of medical care for the most common diseases of civilization;
- schematically display the mechanisms of pathogenesis and clinical manifestations in diseases of civilization;
- to analyze in pathogenesis cause and effect disorders, pathological and adaptive-compensatory reactions, local and general, specific and nonspecific, to find the leading link in pathogenesis;
- determine the principles of treatment of diseases of civilization.

possess:
- methods for determining body mass index and determining the stage of obesity;
- methods for determining blood glucose;
- skills in determining functional parameters of the cardiovascular system (pulse, blood pressure).

4. The educational component structure

Names of content modules and topics	**The amount of hours**					
	full time study					
	the whole amount	**у тому числі**				
		l.	**sem**	**Practical lessons**	**lab**	**self-study**
1	*2*	*3*	*4*	*5*	*6*	*7*
Content module 1. Modern ideas about the development of diseases of civilization						
Topic 1. The concept of "diseases of civilization". Characteristics of diseases of civilization and causes of their development. Characterization of the main risk factors, features of their development and interaction.	11	1		4		6
Topic 2. Metabolic syndrome.	10	1		4		5

Topic 3. Diseases of civilization: obesity and food addictions.	9	1		2		6
Topic 4. Diseases of addictive behavior and types of mental dependence.	9	1		2		6
Topic 5. Diseases of civilization and social toxicants.	9	1		2		6
Topic 6. Diseases of civilization and mental health.	9	1		2		6
Topic 7. Iatrogenic diseases.	7	1				6
Topic 8. Immunosuppressive conditions. AIDS.	9	1		2		6
Topic 9. Sexually transmitted infections.	9	1		2		6
Semester credit from module 1	8			1		7
Усього годин	**90**	**9**		**21**		**60**

5. Contents of the educational component

Content module 1. Modern ideas about the development of diseases of civilization.

Topic 1. The concept of "diseases of civilization". Characteristics of diseases of civilization and causes of their development. Characterization of the main risk factors, features of their development and interaction. Evolution of the disease. Features of the life of a modern person. Definition of the concept of "diseases of civilization". The main nosological forms of diseases of civilization. Scientific and technological progress and social changes as pathogenetic factors in the development of diseases of civilization. Pathogenetic role of physical inactivity and nutritional disorders in the development of some diseases of civilization. Ecological factors and their importance in the emergence and development of diseases of civilization.

Topic 2. Metabolic syndrome: etiology, pathogenesis. Metabolic syndrome: history of study and definition of the concept. Insulin resistance and its role in the development of metabolic syndrome. Alimentary obesity of abdominal type and metabolic syndrome. Dyslipidemia as a manifestation of metabolic syndrome.

Topic 3. Diseases of civilization: obesity and food addictions. Obesity: definition of the concept, classification. Etiology and pathogenesis of certain forms of obesity. Medical problems associated with obesity. Other eating disorders (anorexia, bulimia, binge eating disorder).

Topic 4. Diseases of addictive behavior and types of mental dependence. Modern concepts of addictive behavior. Causes and mechanisms of formation of non-chemical forms of addiction. Gambling - a pathological tendency to gamble. Internet addiction and other technological addictions. Social networks - a disease of the XXI century. Sexual addiction.

Topic 5. Diseases of civilization and social toxicants. Chemical forms of addictive behavior. Negative effects of smoking on the human body. Drug addiction and substance abuse. Etiology, pathogenesis, types. Etiology and pathogenesis of alcoholism.

Theme 6: Diseases of civilization and human mental health. The concept of mental health. Criteria and factors that determine mental health. Depression. Chronic fatigue syndrome. History, manifestations, treatment.

Topic 7. Iatrogenic diseases. The concept of "iatrogeny". Factors of development of iatrogenies. Classification of iatrogenies. Drug-related disease as a consequence of irrational use of drugs. The role of the pharmacist in the prevention of drug-related illness.

Topic 8. Immunosuppressive conditions. AIDS. Types of immune deficiency. Etiology, pathogenesis of primary and secondary immunodeficiencies. Typical manifestations of immune deficiency. Etiology, pathogenesis of AIDS. Pathophysiological characteristics of the periods of HIV infection. Typical clinical manifestations of AIDS. Principles of prevention and treatment of HIV infection.

Topic 9: Sexually transmitted infections. The idea of infectious diseases transmitted mainly by sexual contact, their classification. Sources and ways of spreading. "Classical" sexually transmitted diseases - syphilis and gonorrhea. Sexually transmitted infections with predominantly genital involvement (chlamydia,

trichomoniasis, genital herpes). Sexually transmitted infections with predominant involvement of other organs (hepatitis B, C).

Semester credit from module 1

6. Topics of lectures

№	Name of topic	The amount of hours
1	The concept of "diseases of civilization". Characteristics of diseases of civilization and causes of their development. Characterization of the main risk factors, features of their development and interaction.	1
2	Metabolic syndrome: etiology, pathogenesis.	1
3	Diseases of civilization: obesity and food addictions.	1
4	Diseases of addictive behavior and types of mental dependence.	1
5	Diseases of civilization and social toxicants.	1
6	Diseases of civilization and mental health.	1
7	Iatrogenic diseases.	1
8	Immunosuppressive conditions. AIDS.	1
9	Sexually transmitted infections.	1
	The whole amount of hours	**9**

7. Topics of seminars

It is not provided by the curriculum.

8. Topics of practical lessons

№	Name of topic	The amount of hours
1	Modern ideas about the development of diseases of civilization. Cardiovascular pathology.	4
2	Metabolic syndrome: consequences.	4
3	Diseases of addictive behavior: characteristics, factors, consequences.	4
4	Stress and its importance in the pathogenesis of human diseases. Neuroses. Psychoses.	4
5	AIDS and immunodeficiency states in modern conditions. Venereal diseases.	4
6	Semester credit	1
	The whole amount of hours	**21**

9. Topics of laboratorial lessons

It is not provided by the curriculum.

10. Self-study work

№	Name of topic	The amount of hours
1	The role of heredity in pathology. Hereditary and congenital diseases. Chromosomal diseases	6
2	Diseases of the musculoskeletal system. Osteoporosis. Osteochondrosis.	6
3	Characteristics of the main xenobiotics (toxicants), their importance and fate in the human body, prevention. The importance of food additives. Therapeutic and preventive measures for xenobiotic aggression.	5
4	Electromagnetic fields and health. The effect of noise and vibration on the human	6

	body.	
5	Pathogenic effect of radiation energy on the body. Long-term effects of low doses of ionizing radiation.	6
6	Chronic neurodegenerative diseases (Alzheimer's and Parkinson's diseases).	6
7	Occupational diseases.	6
8	Varicose veins of the lower extremities.	6
9	Chronic obstructive pulmonary disease (COPD).	6
10	Iatrogenic diseases.	6
11	Preparing for the semester test	7
	The whole amount of hours	**60**

Tasks for Self-study work

1. Higher education applicants independently work on topics of independent work in the discipline that are not included in the plan of classroom classes, using basic, additional educational literature and Internet resources.
2. Evaluation of topics that are submitted only for independent work and are not included in the topics of classroom training is controlled during the control of content modules.

11. Criteria and evaluation order of educational outcomes

The study of the educational component takes place during one semester, which ends with a semester test. Semester grades are based on the current academic performance of the student.

Evaluation system for the educational component

The results of the semester control in the form of a semester test are evaluated on a 100-point, undifferentiated scale ("passed", "failed") and on the EKTS scale.

Points from the educational component are calculated according to this ratio:

Types of evaluation	**Number of points**
Module 1	
Content module 1 1. Assessment of topics 1-9: in-class work (oral questioning, test tasks, practical assignments or case studies). 2. Control of content module 1: theoretical questions and test tasks.	100 (100 %)
Semester credit from module 1	100

The independent work of higher education students is assessed during the current control and during the control of the content module.

Evaluation of the progress of a higher education student for each of the planned types of work in the classroom and during control is carried out according to the following criteria:

Types of work for which the applicant receives points	**Maximum number of points per type of work**	**Evaluation criteria**
work in classes (1-9) of content module 1 (min-30- max50)		
oral survey	**3 (6) points**	**3(6) points** - the student gives comprehensive answers to theoretical questions of the teacher; shows comprehensive and in-depth knowledge of theoretical material, demonstrates knowledge of additional literature on the topic of the class; thinks logically and constructs an answer.
		2(5) points - the higher education student has mastered the theoretical material well, but makes certain inaccuracies and mistakes in the logic

		of the presentation of theoretical content, which he or she eliminated with the help of the teacher.
		1 (4) points - the higher education student has basically mastered the theoretical knowledge of the educational component, but answers unconvincingly, additional questions cause uncertainty.
		0,5 (3) points - the student has a low level of theoretical knowledge, confuses concepts, additional questions indicate a lack of stable knowledge.
		0 points - the higher education student has not mastered the educational material of the educational component, does not know scientific facts, definitions, and is almost not familiar with primary sources and recommended literature.
preparation of test tasks	**2(4) points**	The applicant for higher education gave correct answers to 90-100% of the test tasks. One correct answer is 0,2 (0,4) points. 10 tests x 0,2(0,4) = 2(4) ***points***
Control of the content module 1 (min-30- max50)		
oral survey or written work	**30**	**10 points for 1 question**
		10 points - the student gives comprehensive answers to theoretical questions of the teacher; shows comprehensive and in-depth knowledge of theoretical material, demonstrates knowledge of additional literature on the topic of the class; thinks logically and constructs an answer.
		8 points - the student has mastered the theoretical material well, but makes certain inaccuracies in the logic of the presentation of theoretical content.
		6 points - the applicant has satisfactorily mastered the theoretical material, but makes mistakes in the logic of the presentation of theoretical content.
		4 points - the student has basically mastered the theoretical knowledge of the educational component, but answers unconvincingly, additional questions cause uncertainty.
		2 points - the student has a low level of theoretical knowledge, confuses concepts, and additional questions indicate a lack of stable knowledge.
		0 points - the student has not mastered the educational material of the educational component, does not know scientific facts, definitions, and has little or no knowledge of primary sources and recommended literature.
testing	**20**	One correct answer is worth 1,0 points. 20 tests x 1,0 = ***20 points***

Scoring scheme and distribution of points

Current testing and self-study			Semester credit	Sum
Content module 1				
T1, T3 – T9	T2	CCM 1		
3-5 points (24-40 points)	6-10 points (6-10 points)	30-50 points	60-100	60-100
			In total for M1:	***60-100***

T1, T2 ... T10 topics of practical classes

Based on the results of studying the topics of the discipline, an overall grade is formed by the sum of the current rating and the result of the final module control, respectively. The higher education applicant is assigned a grade in accordance with the following scale of knowledge assessment:

Total points	Marks ECTS	Score on the national scale	
		mark	credit
90 – 100	A	perfectly	satisfactorily
82-89	B	good	
74-81	C		
64-73	D	satisfactorily	
60-63	E		
35-59	FX	unsatisfactorily	satisfactorily

12.Forms of progress and semester supervision of academic achievements

Semester control is carried out in the form of a semester test and a semester exam.
Forms:
- current control: oral questioning, test control, content module control work.

13. Methodological support

1. Presentation of lectures.
2. Information posters and tables.
3. Guide for practical classes.
4. Tests for current control.
5. Tests for the final module control.

14. Reading suggestions

The main reading suggestions

1. Pathological physiology. Module 1: teaching aid for teachers for practical training with applicants for higher education specialty «226 Pharmacy, industrial pharmacy» of the educational and professional program «Pharmacy» / N. M. Kononenko, V. V. Gnatyuk, V. A. Rybak [et al.]. Kharkiv: NUPh, 2021. 260 p.
2. Pathological physiology. Module 1: teaching aid for practical training for applicants for higher education in the specialty «226 Pharmacy, industrial pharmacy» of the educational and professional program «Pharmacy» / N. M. Kononenko, V. V. Gnatyuk , V. A. Rybak [et al.]. Kh.: NUPh, 2021. 245 p.
3. Pathological Physiology: Manual for students of higher schools / S. I. Kryzhna, N. M. Kononenko, T. I. Tyupka [et al.]. Kharkiv: NUPh: Golden Pages, 2012. 200 p.

Supplementary reading suggestions

1. 1. Pathophysiology: textbook / N.V. Krishtal, V.A. Mikhnev, N.N. Zayko et al.; edited by N.V. Krishtal, V.A. Mikhnev. 2nd edition, corrected. Kyiv: AUS MedicinePublishing, 2018. 656 p.
2. 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; рец.: N. V. Krishtal, N. K. Kazimirko. 2nd ed. Vinnytsya: Nova Knyha Publishers, 2016. 656 p.
3. Simeonova N. K. Pathophysiology=Патофізіологія: 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.
4. Means of Protecting the Body from the Effects of Ionizing Radiation: study guide / T.O. Zhukova, V.F. Pocherniayeva, V.P. Bashtan. К.: ВСВ «Медицина», 2019.112 с.
5. Kathryn L. McCance, Sue E. Huether Study Guide for Pathophysiology - E- Book: The Biological Basis for Disease in Adults and Children. Elsevier Health Sciences, 2018. 325 p.
6. Lee-Ellen C. Copstead-Kirkhorn, Jacquelyn L. Banasik Study Guide forPathophysiology - E-Book. Elsevier Health Sciences, 2013. 304 p.
7. Tommie L. Norris. Porth's Essentials of Pathophysiology. 5th edition, 2019. 1248 p.
8. Gary D. Hammer, Stephen J. McPhee. Pathophysiology of Disease: An Introduction to Clinical

Medicine. 8th edition, 2018. 832 p.

15. Electronic resources, including the Internet

1. Website of the Department of Physiology and Pathological Physiology: https://pat.nuph.edu.ua/
2. Library of NUPh: e-mail https://lib.nuph.edu.ua/
3. Distance learning website: https://pharmel.kharkiv.edu/
4. Diseases of civilization: history, ecology, genetics https://www.researchgate.net/publication/357018903_DISEASES_OF_CIVILIZATION_HISTORY_ECOLOGY_GENETICS
5. Civilization Diseases and Their Relations with Nutrition and the Lifestyle https://www.biomed.cas.cz/physiolres/pdf/58%20Suppl%201/58_Si.pdf