



**MINISTRY OF HEALTH OF UKRAINE
NATIONAL UNIVERSITY OF PHARMACY
Faculty of Pharmacy
Department of Pharmacognosy and Nutriciology**

BASICS OF RATIONAL NUTRITION

**WORK PROGRAM
of educational component**

training for _____ **the second (master's) level** _____
(Higher Educational Level Name)
specialty _____ **«226 Pharmacy, Industrial Pharmacy»** _____
(Code and Specialty Name)
knowledge industry _____ **«22 Healthcare»** _____
(Code and Knowledge Field Name)
of educational program _____ **«Pharmacy»** _____
(Educational Program Name)

Kharkiv-2023

The work program of the educational component "Basics of rational nutrition" in specialty 226 «Pharmacy, Industrial pharmacy» educational program «Pharmacy» (4.10д)англ for applicants for higher education 5 year of study.

EDUCATIONAL COURSE TEAM:

KYSLYCHENKO Viktoriia, head of the Department of Pharmacognosy and Nutriciology, doctor of pharmaceutical sciences, professor; KRIVORUCHKO Olena, professor of the higher education institution of the Department of Pharmacognosy and Nutriciology of the National University of Pharmacy, Doctor of Pharmacy. Sciences, professor; TARTYNSKA Ganna, associate professor of the institution of higher education of the Department of Pharmacognosy and Nutriciology of the National University of Pharmacy, candidate of pharmacology. Science, associate professor.

Work program were reviewed at the Department of Pharmacognosy and Nutritiology meeting
Record from « 1 » of September 2023 № 1

Head of the Department _____



Prof. Viktoriia KYSLYCHENKO

Work program has been approved at the meeting of the Methodical Commission of chemical disciplines session
Record from « 5 » of September 2023 № 1

Head of the Specialized Committee _____



Prof. Viktoriya GEORGIYANTS

1. Description of the educational component

Language of study: *English*

Status of the educational component: *selective*

Prerequisites for studying the educational component: As an educational component "Basics of rational nutrition":

- is based on the knowledge obtained by students of higher education during the study of normal and pathological human physiology, organic chemistry, biological chemistry.

The subject of the educational component "Basics of rational nutrition" is the nutritional composition of food, the main provisions and principles of rational nutrition, as well as the nutritional assessment of the diet.

Information content of the educational component. 90 hours of 3.0 ECTS credits are allocated to the study of the educational component.

2. Objectives and tasks of the educational component

The purpose of teaching the educational component «Basics of rational nutrition» is the formation of a system of theoretical knowledge, practical abilities and skills of higher education students regarding the organization of the nutrition system of a healthy and sick person at different age stages of his life by applying modern scientific provisions of nutriology and evaluating the nutrient composition of food products used for prevention and treatment of the population.

The main tasks of the educational component «Basics of rational nutrition» are:

- formation of skills for calculating the body's physiological need for food and biologically active substances, substantiating the energy value and nutrient composition of the diet;
- promotion of practical mastering of skills and abilities in assessing the nutritional composition of food products of different population groups;
- formation of the ability to evaluate food products according to the requirements of the relevant regulatory documentation and formulating a conclusion regarding their quality and compliance with standards;
- acquisition of practical skills on the basics of rational nutrition by future specialists with justification of measures aimed at strengthening the health of the population;
- formation of readiness to carry out educational and advisory work among the population on issues of assessing the nutritional composition of food products;
- promotion of the basics of rational nutrition among the population.

3. Competence and planned educational outcomes

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

- **integral:** the ability to solve typical and complex specialized tasks and practical problems in professional pharmaceutical activity in the field of health care on a socially oriented basis or in the learning process, which involves conducting chemical, biopharmaceutical, biomedical, sociological, etc. research and/or implementation of innovations and is characterized by uncertainty of conditions and requirements;
- integrate knowledge, critically consider and solve complex issues, make decisions in difficult unpredictable conditions, formulate judgments in the presence of incomplete or limited information, taking into account aspects of social and ethical responsibility; clearly and unambiguously convey your conclusions and knowledge, rationally substantiating them, to a professional and non-specialist audience

general:

GC 6. Knowledge and understanding of the subject area and understanding of professional activity.

special (professional):

PC 16. Ability to organize and conduct the procurement of medicinal plant raw materials in accordance with the rules of Good Practice of Cultivation and Collection of Raw Materials of Plant Origin (GACP), as a guarantee of the quality of medicinal plant raw materials and medications based on it. Ability to predict and calculate ways to solve the problem of conservation and protection of thickets of wild medicinal plants, in accordance with current legislation.

PC 20. Ability to develop methods for quality control of medications, including active pharmaceutical ingredients, medicinal plant raw materials and excipients using physical, chemical, physicochemical, biological, microbiological, pharmacotechnological and pharmacoorganoleptic control methods.

Integrative final **program learning outcomes** (PLO), the formation of which is facilitated by the educational component:

PLO 7. To perform professional activities using creative methods and approaches.

PLO 28. To organize and conduct rational procurement of medicinal plant raw materials. To develop and implement measures for the protection, reproduction and rational use of wild species of medicinal plants.

As a result of studying the academic discipline, the student should

know:

- structure and structure of the digestive system; the basics of the physiology of food digestion;
- the importance of proteins, fats, carbohydrates, minerals and vitamins in human nutrition;
- the content of natural substances in food products and their impact on human health;
- hygienic requirements and standards of human nutrition;
- basics of rational nutrition; peculiarities of therapeutic and preventive and dietary nutrition;
- theoretical aspects of physiology and food hygiene;
- hygienic evaluation of the main groups of food products;
- basic requirements for designing an individual diet.

be able:

- determine the nutritional and biological value of food products;
- evaluate the nutritional composition of food products of different population groups;
- evaluate the compliance of food products with the principles of rational nutrition;
- evaluate food products in accordance with the requirements of the relevant regulatory documentation and formulate conclusions regarding their quality and compliance with standards;
- calculate the energy value of products and rations;
- calculate the physiological needs of the body in food and biologically active substances with justification of the energy value and nutrient composition of the food diet;
- calculate the physiological needs of the body in food and biologically active substances with justification of the energy value and nutrient composition of the food diet;

to possess:

- the recipient of a higher education degree (master's degree) must possess general and special (professional) competencies (*expected learning outcomes*).

4. The educational component structure

Names of content modules and topics	The amount of hours				
	full time study (4,10д)				
	the whole amount	including			
l.		sem	pract	self-study	
<i>I</i>	2	3	4	5	6
Module 1. Nutritional basics of rational and medical nutrition. Evaluation of the nutritional composition of food products that form the basis of medical nutrition, rational nutrition of people of different sexes, ages and types of activities					
Content module 1. Nutritional foundations of rational and medical nutrition					
Topic 1. General concepts of energy metabolism.	4,5	0,5	-	1,0	3,0
Topic 2. The main provisions of rational nutrition.	5,5	0,5	-	1,0	4,0
Topic 3. The concept of medical nutrition, its types. Alternative types of food.	5,5	0,5	-	1,0	4,0
Topic 4. The concept of food poisoning and its prevention	5,5	0,5	-	1,0	4,0

<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
Topic 5. Basics of nutrition science	8,0	1,0	-	3,0	4,0
Control of the substantial module 1	7,0	-	-	2,0	5,0
The whole amount of hours for the content module 1	36,0	3,0	-	9,0	24,0
Content module 2. Evaluation of the nutritional composition of food products that form the basis of medical nutrition, rational nutrition of people of different sexes, ages and types of activities					
Topic 6. Nutrient composition of food products in various nosological forms of diseases	9,0	1,0	-	3,0	5,0
Topic 7. Basics of rational nutrition for pregnant women and women who have breastfed children	7,5	0,5	-	2,0	5,0
Topic 8. Basics of rational nutrition for children and adolescents	7,5	0,5	-	2,0	5,0
Topic 9. Basics of rational nutrition for the elderly	7,5	1,0	-	1,5	5,0
Topic 10. Basics of rational nutrition for athletes	7,5	1,0	-	1,5	5,0
Topic 11. Peculiarities of nutrition of workers in production with harmful working conditions	6,0	1,0	-	1,0	4,0
Control of the substantial module 2	8,0	-	-	3,0	5,0
The whole amount of hours for the content module 2	53,0	5,0	-	14,0	34,0
Semester credit from the module 1	1,0	-	-	1,0	-
Total for Module 1	90,0	8,0	-	24	58

5. Content of the program of the educational component

Content module 1. Nutritional foundations of rational and medical nutrition

Topic 1. General concepts of energy metabolism.

Topic 2. The main provisions of rational nutrition. Classical theories and concepts of nutrition.

Separate nutrition: chemical and energy bases; basic principles; theory of H. Shelton; indications and contraindications for separate feeding. Author's diets. Rational nutrition. Balanced nutrition: basic principles; balance of protein, fat and carbohydrate components, vitamins and mineral elements; enzymatic and biotic adequacy of nutrition.

Topic 3. The concept of medical nutrition, its types. Alternative types of food. Basic rules of healthy nutrition: diet, its meaning, basic requirements for it; distribution of the energy value of the daily ration; the consequences of a violation of the diet; determining the menu according to daily rhythms, climatic and seasonal conditions. Biological and nutritional value of basic food products: milk and dairy products, meat and meat products, fish and seafood, eggs, grain products, dietary fats, vegetables, fruits and berries, sugary products and sugar substitutes. Drinks: tea, coffee, cocoa, juices, carbonated drinks, natural mineral waters, oxygen cocktails.

Basic principles of medical nutrition. Tactics of diet therapy: step system, "zigzag" system. Contrast diets: unloading and loading. Diet of patients. System of medical nutrition: elemental and dietary. Basic characteristics of diets: indications for use; target (therapeutic) purpose; energy value and chemical composition; peculiarities of culinary processing of food; diet; a list of prohibited and recommended foods. Characteristics of the main therapeutic number diets according to Pevzner. Characteristics of the new system of standard diets (2003): standard diet, diet with mechanical and chemical sparing, high-protein diet, low-protein diet, low-calorie diet. Comparison of numbered and standard diet systems. Organization of medical nutrition. The appointment procedure and organization of providing patients with medical nutrition. Quality control of products and ready-made food. Vitaminization of food with ascorbic acid. Features of medical cooking. Technology of preparation of medicinal dishes. Organization of dietary nutrition in sanatorium-resort institutions. Organization of dietary nutrition at industrial plants. Selection and referral program for dietary nutrition. Organization of medical nutrition

for outpatients. Features of use and classification of fortified food products. Specialized food products and their purpose. Preventive, curative and curative-prophylactic products. Biologically active additives to food. Classification and purpose of biologically active impurities. Nutraceuticals and parapharmaceuticals. Requirements for substances used as biologically active additives. Advantages of using biologically active substances compared to other means of nutritional correction. The influence of enriched products and biologically active impurities on the human body.

Topic 4. The concept of food poisoning and its prevention. Food poisoning and their prevention. Food poisoning and their classification. Food toxic infections, food bacterial toxicosis (botulism), staphylococcal toxicosis: concepts, etiology and pathogenesis. Food poisoning of mixed etiology. Pathogens: sources and ways of food contamination and their viability. The role of certain food products in the occurrence of food poisoning. Laboratory diagnostics and prevention.

Topic 5. Basics of nutrition science. The main functions of food: energetic, plastic, bioregulatory, adaptive-regulatory, protective-rehabilitation and signaling-motivational. Nutrition as a means of recovery. The principles of substantiation of the food ration: the level of the main metabolism, the specific dynamic effect of food, the level of additional metabolism according to the type of activity, the coefficient of the energy value of food, the coefficient of assimilation of food. The concept of replaceable and irreplaceable food substances. Macro- and micronutrients. Biological and nutritional value of proteins, carbohydrates, lipids.

Food fibers, ballast substances. Indications for the use of dietary fibers. The effect of refined foods. Importance of vitamins, amino acids, minerals in a balanced diet. The body's need for nutrients. Water and its role in human life. Water balance. Functional qualities of water. Ice water. Sources of water supply. Types and sources of water pollution. Water quality indicators.

Content module 2. Evaluation of the nutritional composition of food products that form the basis of medical nutrition, rational nutrition of people of different sexes, ages and types of activities

Topic 6. Nutrient composition of food products in various nosological forms of diseases.

Basics of medical nutrition for cardiovascular diseases. Functional principles of substantiation of the diet in cardiovascular diseases. Diet therapy as a means of balanced nutrition, hypocholesterolemic and lipotropic effect. List of foods that are recommended and excluded from the diet for diseases of the cardiovascular system. Karel's diet. Potassium diet. Yarotsky's diet. Diet Kempner (rice compote). Hyposodium and salt-free diet. Magnesium diet. Fruit and vegetable diet M.I. Pevzner. Features of culinary processing of products and dishes. Compilation of a one-day, weekly, long-term menu for cardiovascular diseases.

Basics of medical nutrition for diseases of the respiratory organs. Functional principles of substantiation of the diet in diseases of the respiratory system. Diet as a means of anti-inflammatory, detoxification and restorative action. List of foods that are recommended and excluded from the anti-inflammatory diet. Hypochlorite diet. Diet as a means of desensitization, reduction of vegetative dystonia and hyperergy in bronchial asthma. Contrast (low-calorie) diets. Preparation of a one-day menu for acute pneumonia, bronchial asthma, chronic diseases of the respiratory system. Justification of the weekly menu for diseases of the respiratory organs. Therapeutic nutrition for tuberculosis. Functional principles of substantiation of nutrition in tuberculosis. Diet therapy as a means of stimulating reparative processes, immunity, general metabolism and reduction of body hyperergy. List of products that are recommended and excluded from the diet for tuberculosis. Potassium diet. Compilation of a one-day, weekly, long-term diet for a tuberculosis patient.

Basics of therapeutic nutrition in diseases of the gastrointestinal tract. Functional principles of substantiation of the diet in diseases of the gastrointestinal tract. Peculiarities of diet therapy for functional disorders of the stomach: hypo- and hypersecretion, hypo- and hypertension of the stomach. Diet therapy as a means of full, varied and balanced nutrition, rhythm of the diet, prevention of excessive mechanical and chemical irritation of the gastrointestinal tract. Anti-ulcer diet M.I. Pevzner. Diet O.M. Nogallera. Contrast diets. Features of culinary processing of products and dishes. Medicinal mineral waters Preparation of a one-day, weekly, long-term menu for diseases of the gastrointestinal tract. General principles of diet therapy for diseases of the liver and biliary tract. Peculiarities of diet therapy for acute and chronic hepatitis, liver cirrhosis, acute and chronic cholecystitis, gallstone disease. The main principles of diet therapy in case of violation of the excretory function of the pancreas. Diet therapy for acute and chronic pancreatitis.

Basics of medical nutrition for infectious diseases of the gastrointestinal tract. Functional principles of substantiation of the diet in infectious diseases of the gastrointestinal tract. Diet therapy as a means of reducing intestinal peristalsis, stabilizing bile formation and cholesterol metabolism, compensating fluid loss. List of foods that are recommended and excluded from the diet for dysentery and typhoid fever. Technological features of food preparation for infectious diseases of the gastrointestinal tract. Compilation of a one-day, weekly, long-

term menu for infectious diseases of the gastrointestinal tract.

Basics of medical nutrition for endocrine and metabolic diseases. Functional principles of substantiation of the diet in endocrine and metabolic diseases. Diet therapy as a means of limiting the body's energy consumption and stabilizing metabolic disorders. Tentative trial, training low-calorie diet. Therapeutic alkaline mineral waters. Juice therapy. Small meals. Contrast diets: cucumber, apple, watermelon, protein. Restriction of products saturated with purines, oxalic acid. The health effect of a dairy-vegetable diet. Therapeutic fasting as a short-term improvement measure. Preparation of a one-day, weekly, long-term menu for endocrine and metabolic diseases.

Basics of medical nutrition for hereditary metabolic diseases. Causes of hereditary metabolic disorders. Syndromes of hereditary metabolic diseases. Congenital disorders of amino acid metabolism: phenylketonuria, homocystinuria, histidinemia, cystinosis, hyperammonemia, cystinuria. Congenital disorders of carbohydrate metabolism: galactosemia, fructosemia. Etiology, pathogenesis and diagnosis of hereditary metabolic disorders. Approaches to the correction of hereditary metabolic diseases. Compilation of a one-day, weekly, long-term menu for hereditary metabolic disorders.

Basics of therapeutic nutrition in kidney diseases. Functional principles of substantiation of diet in kidney diseases. Diet therapy as a means of anti-inflammatory, desensitizing, anti-acidic and anti-azotemic action. Giordano-Giovanetti diet. Contrast diets: watermelon, pumpkin, rice compote, apple, potato. Hyposodium diet. Healing mineral waters. Use of alkaline mineral waters in uraturia and oxaturia. The use of acidic mineral waters for phosphaturia. Compilation of one-day, weekly, long-term menu for kidney diseases.

Basics of therapeutic nutrition in collagen diseases. Functional principles of substantiation of the diet in collagen diseases. Diet therapy as a means of restoring connective tissue structures and anti-inflammatory action. List of products recommended and excluded from the diet for rheumatism and rheumatoid arthritis. Calcium diet. Prevention of mechanical irritation of the gastrointestinal tract. Compilation of a one-day, weekly, long-term menu for rheumatism and rheumatoid arthritis.

Basics of medical nutrition for allergic diseases. The concept of food allergies. Products with different allergenic potential. Classification of food allergens. Diagnosis of food allergy. Directions of diet therapy for allergic diseases. Principles of food preparation for allergic diseases. Features of heat treatment of food in allergic diseases. Non-specific hypoallergenic diet (diet No. 5). Peculiarities of organization of hypoallergenic diet for children of the first year of life. Elimination diets. The concept of cross-food sensitization. Reasons for the development of food allergy in a child of the first year of life. Nutrition of a child suffering from an allergy to cow's milk. Peculiarities of nutrition in case of food allergy. Factors affecting the effectiveness of diet therapy for food allergy.

Basics of medical nutrition during surgical intervention. Preoperative diet therapy as a reserve of body nutrients. Diet therapy as a means of normalizing metabolism, anti-inflammatory, detoxifying, regenerative effect on the human body. Justification of fasting diet during surgical intervention. Diet therapy as prevention of metabolic acidosis. Nutrition for post-resection syndrome. Nutrition with dumping syndrome. Methodology and chemical composition of the diet during gastric resection. Corrective postoperative diets. List of foods that are recommended and excluded from the diet during surgery. Peculiarities of nutrition of patients with diabetes after surgery. Nutrition for injuries. Features of nutrition for burns. Compilation of a one-day, weekly, long-term menu during surgical intervention.

Topic 7. Basics of rational nutrition for pregnant women and women who have breastfed children.

General principles of rational nutrition for pregnant women. Determination of a pregnant woman's need for organic substances. Rational individual diet of pregnant women. Culinary processing of products as a means of preserving nutritional value and better assimilation of nutrients. Peculiarities of nutrition of pregnant women with toxicosis. Therapeutic nutrition of pregnant women with anemia. Combination of drugs and diet during pregnancy. Preparation of a pregnant woman for lactation and feeding a child. List of foods that are recommended and excluded from the diet during pregnancy. Preparation of one-day and weekly diet in the first and second half of pregnancy. Basics of rational nutrition for women who have breastfed children. Energy value of the daily diet during breastfeeding. A woman's diet during breastfeeding. Diet therapy as a means of preventing hypogalactia. Pharmacological treatment of women during breastfeeding. List of foods that are recommended and excluded from the diet during breastfeeding. Drawing up a one-day, weekly and long-term menu during breastfeeding.

Topic 8. Basics of rational nutrition for children and adolescents.

Basics of rational nutrition for children of the first year of life. General principles of nutrition for children of the first year of life. The relationship between natural and artificial feeding. Nutrition and resistance to infections, the possibility of enteral sensitization. Metabolic aspects of nutrition of children of the first year of

life. The need of children in the first year of life in nutrients. Formulas of balanced nutrition for children of the first year of life. Nutrient requirements of premature babies. Composition of colostrum and human milk. Changes in the composition of human milk during heat treatment. Cow's milk: chemical composition and nutritional value. Hygienic requirements for prepared milk. Normalization of cow's milk. Milk of other farm animals. Clinical monitoring of the quality of nutrition of a child of the first year of life. Natural feeding. Difficulties and contraindications to breastfeeding. Technique and mode of breastfeeding. The concept of free feeding. Evaluation of the "sufficiency" of milk volume during natural feeding. Correction of nutrition during breastfeeding. Complementary food during natural feeding. Artificial feeding. Milk mixtures for artificial feeding. Rules and techniques of artificial feeding. Correction of nutrition and supplementary food during artificial feeding. Mixed feeding. The use of concentrates and preservatives in the nutrition of infants. Adapted products, the composition of which is as close as possible to human milk. Products for the organization of complementary feeding of children of the first year of life. Features of feeding a newborn baby. Rational nutrition of a child aged 1 to 4 months. Nutrition of a child 4 - 8 months. Rules and terms of introduction of supplementary food. Nutrition of a child of 8-12 months.

Basics of rational nutrition for young children. General principles of nutrition for children from 1 to 3 years. Nutrient needs of young children. Features of culinary processing of food for young children. Dishes for baby food: milk formulas, cold dishes and snacks, first courses, second courses, fruit and vegetable juices and purees, sweet dishes and drinks. Vitamins and flavor additives.

Basics of rational nutrition for preschool children. Preschool children's need for nutrients. Organizational principles of developing food rations for preschool children. Organization and nutrition regimes of preschool children. Characteristics of dishes recommended for children 3-7 years old. Peculiarities of culinary processing of food for preschool children. Sanitary and hygienic requirements for food products used in preschool educational institutions. The use of industrial products, preserves and preservatives in the nutrition of preschool children. Compilation of one-day, weekly and long-term menus in the period from 3 to 7 years.

Basics of rational nutrition for schoolchildren. Nutrient needs of school-age children. Peculiarities of metabolism in adolescence. Volume and diet of school-age children. School breakfasts. Healthy food for schoolchildren. Compilation of one-day, weekly and long-term menus for schoolchildren. Peculiarities of nutrition of schoolchildren during various sports. Peculiarities of nutrition of schoolchildren in pioneer camps and tourist trips.

Topic 9. Basics of rational nutrition for the elderly. Peculiarities of metabolism of elderly and senile people. Need of elderly people in proteins, fats, carbohydrates, vitamins and minerals. Principles of building nutrition in the elderly and senile age. Diet in old age. The effect of calorie restriction on aging processes. Nutritional support for the elderly and senile. Lipotropic and antioxidant orientation of the nutrition of the elderly and senile.

Topic 10. Basics of rational nutrition for athletes. Peculiarities of athletes' metabolism. Proteins, fats and carbohydrates in the athlete's diet. Metabolism of amino acids during exercise. Recommendations for athletes on the use of carbohydrate products. Ways to increase glycogen reserves in athletes during preparation for competitions. Vitamin provision of the diet of athletes. The body's need of athletes in mineral substances. Thermoregulation during physical exertion. Replenishment of electrolyte losses during exercise. Water is an important component of athletes' diet. Hydration before and after physical training. Selection of drinks for rehydration. The concept of basic nutrition and energy dietetics in sports. Products of increased biological value used in sports. Special sports nutrition products. Body weight correction of athletes through dietary manipulations.

Ways to increase the performance of athletes with the help of nutritional factors: bicarbonate and sodium citrate, creatine, branched amino acids, glutamine, arginine, ornithine, lysine, L-carnitine, ubiquinone, phosphates, choline, glycerin. Technology of using biologically active additives in sports. Biologically active additives of adaptogenic, actoprotective, antioxidant, anabolic, plastic, energy-providing, restorative and bioregulatory effects. General rules for the use of biologically active additives depending on the nature of the loads.

Basics of rational nutrition for young athletes. Physiological features of the body of young athletes. The role of micronutrients in the nutrition of young athletes. Liquid consumption.

Common features of nutrition of representatives of various sports. Peculiarities of sportsmen's nutrition in cyclical, game, complex coordination sports, weightlifting and martial arts. Problems of nutrition in the preparatory, competitive and recovery periods. Recommendations regarding the diet before and after training. Drinking mode. Diets for athletes. Technology of preparing meals for sports nutrition.

Topic 11. Peculiarities of nutrition of workers in production with harmful working conditions. The value of therapeutic and preventive nutrition. Types and rations of therapeutic and preventive nutrition. Milk in

therapeutic and preventive nutrition. Vitamins in therapeutic and preventive nutrition. The use of pectin in therapeutic and preventive nutrition. Organization of provision of medical and preventive nutrition. Quality control of therapeutic and preventive nutrition.

6. Topics of lectures

№	Name of topic	The amount of hours
1.	Rational nutrition. Therapeutic nutrition. Alternative types of food.	2,0
2.	Basics of nutrition: macro- and micronutrients. Water and its role in the human body. Genetically modified organisms, food additives in food products.	1,0
3.	Peculiarities of nutrition in various nosological forms of diseases.	1,0
4.	Features of nutrition of pregnant women and women who have breastfed children, children and adolescents, elderly people, athletes, workers in production with harmful working conditions	4,0
The whole amount of hours		8,0

7. Topics of seminars

Not provided for in the working curriculum.

8. Topics of Practical lessons

№ з/п	Name of topic	The amount of hours
1.	Basic principles of rational nutrition: classical theories and concepts of nutrition; separate meals; author's diets; rational nutrition; balanced nutrition	1,0
2.	The concept of medical nutrition, its types. Alternative types of nutrition: basic principles of medical nutrition; parenteral and tube nutrition; lactotherapy; juice therapy; enotherapy and ampelotherapy; apitherapy; alternative theories and concepts of nutrition.	3,0
3.	Basics of nutrition: macro- and micronutrients; water and its role in human life.	3,0
4.	Control of the substantial module 1	2,0
5.	Nutrient composition of food products for various nosological forms of diseases: therapeutic nutrition for diseases of the cardiovascular system, respiratory organs, gastrointestinal tract, kidneys, endocrine, metabolic, collagen and allergic diseases.	3,0
6.	Basics of rational nutrition for pregnant women and women who have breastfed children.	2,0
7.	Fundamentals of rational nutrition for children and adolescents: fundamentals of rational nutrition for children of the first year of life, young children, and schoolchildren.	2,0
8.	Basics of rational nutrition for the elderly	1,5
9.	Basics of nutrition for athletes	1,5
10.	Peculiarities of nutrition of workers in production with harmful working conditions	1,0
11.	Control of the substantial module 2	3,0
12.	Semester credit from the module 1	1,0
The whole amount of hours		24

9. Topics of laboratorial lessons

Not provided for in the working curriculum.

10. Self-study work

№ з/п	Name of topic	The amount of hours
1.	General concepts of energy metabolism.	3,0
2.	Basic principles of rational nutrition. Principles of using food additives for food products: classification of food additives; food additives that improve the consistency and organoleptic properties of products; antimicrobial substances; accelerators of technological production of food products; food additives that enhance taste; the importance of flavors in food; spices; mixtures of spices as the basis of their rational use; spicy vegetables.	3,0
3.	The concept of medical nutrition, its types. Alternative types of nutrition: the basics of healthy nutrition.	3,0
4.	The concept of food poisoning and its prevention.	4,0
5.	Basics of nutrition science. The effect of refined foods. Sources of water supply. Types and sources of water pollution.	4,0
6.	Control of the substantial module 1	5,0
7.	Nutrient composition of food products in various nosological forms of diseases. Basics of medical nutrition for infectious diseases of the gastrointestinal tract, hereditary metabolic diseases, surgical intervention	5,0
8.	Basics of rational nutrition for pregnant women and women who have breast-fed children: culinary processing of products as a means of preserving nutritional value and better assimilation of nutrients; preparation of a pregnant woman for lactation and feeding a child; pharmacological treatment of women during breastfeeding.	5,0
9.	Fundamentals of rational nutrition for children and adolescents: fundamentals of rational nutrition for preschool children.	5,0
10.	Basics of rational nutrition for the elderly: the effect of calorie restriction on the aging process; lipotropic and antioxidant orientation of the nutrition of the elderly and senile.	5,0
11.	Basics of rational nutrition for athletes: thermoregulation during exercise; the technology of using biologically active additives in sports. Biologically active additives of adaptogenic, actoprotective, antioxidant, anabolic, plastic, energy-providing, restorative and bioregulatory effects. General rules for the use of biologically active additives depending on the nature of the loads.	5,0
12.	Peculiarities of nutrition of workers in production with harmful working conditions: quality control of medical and preventive nutrition.	4,0
13.	Control of the substantial module 2	5,0
The whole amount of hours		58

Tasks for independent work

Topic 1. Biological, ecological and social aspects of nutrition. The organization of rational nutrition as a component of the general task of forming a healthy lifestyle of people. Variety of food. Nutrition strategies.

Topic 2. Principles of using food additives for food products: classification of food additives; food additives that improve the consistency and organoleptic properties of products; antimicrobial substances; accelerators of technological production of food products; food additives that enhance taste; the importance of flavors in food; spices; mixtures of spices as the basis of their rational use; spicy vegetables.

Topic 3. Parenteral and tube nutrition: indications, forms of nutrients, principles of rationing the dosage of nutrients, organization technology, contraindications. Alternative types of food. Therapeutic fasting: functions,

mechanism, conditions of organization, contraindications; short-term daily fasting; method of unloading and diet therapy. Peculiarities of restoration of rational nutrition after medical fasting. Lactotherapy: specific and non-specific. Types and health benefits of dairy products. Features of kumi treatment. S. Botkin's milk diet. Indications and contraindications for lactotherapy. Juice therapy: principles. Use of natural juices for detoxification of the body. Use of natural juices of birch, cabbage, carrot, beet, lemon. Qualitative and quantitative ratios of natural juices in various diseases. Vitamin therapy during treatment with natural juices. Soluble fibers (pectins) as stabilizers of insulin and hunger. Effects of natural juices: anti-inflammatory, anthelmintic, antiseptic, hypotensive, tonic, diuretic. Natural juices are a source of vitamins C, A and minerals. Types of juices: natural, with added sugar, clarified and unclarified. Mixed juices. Nectars are juices with pulp and sugar. Juice production technology. Enotherapy and ampelotherapy. Grapes as a source of healing natural factors. The role of wine in the human diet. Effects of polyphenols in the human body. French paradox. Food concentrate of polyphenols "Enoant". Apitherapy. History of the development of apitherapy. Peculiarities of the physicochemical composition and biological effects of beekeeping products. Botanical origin of honey. Chemical composition of honey. Diastase number. Properties of honey: physical, nutritional, dietary, medical and biological. Indications and contraindications for the use of beekeeping products. Technologies of using beekeeping products. Alternative theories and concepts of nutrition. Vegetarianism. Basic principles of vegetarianism. Types of vegetarianism: lactovegetarianism, ovo-lactovegetarianism. Physiological aspects of vegetarianism. Health and medical value of vegetarianism.

Topic 4. Food poisoning of a non-microbial nature. Poisoning by poisonous and edible mushrooms. Weed toxicosis. Poisoning by stone fruit kernels. Poisoning by seeds of beech, tunga, cotton, beans. Poisoning by poisonous animal tissues. Prevalence and clinical manifestations. Pesticide poisoning. Classification of pesticides (organochlorine, organophosphorus, organomercury compounds, carbamates) and their characteristics. Prevention of pesticide poisoning. Methods of controlling pesticide residues in food products.

Topic 5. The history of the creation of the first transgenic plants. Criteria and methodological principles for assessing the safety of food products from genetically modified sources. The influence of technological processing of food on the content of recombinant DNA in products.

Topic 6. *Basics of medical nutrition for cardiovascular diseases.* General characteristics of forms and stages of atherosclerosis, hypertension, myocardial infarction.

Basics of medical nutrition for diseases of the respiratory organs. General characteristics of chronic and acute diseases of the bronchi, lungs and pleura. General characteristics of forms and stages of tuberculosis.

Basics of therapeutic nutrition in diseases of the gastrointestinal tract. General characteristics of forms and stages of gastritis, peptic ulcer disease, colitis, enterocolitis.

Basics of medical nutrition for infectious diseases of the gastrointestinal tract. General characteristics of forms and stages of dysentery and typhoid fever.

Basics of medical nutrition for endocrine and metabolic diseases. General characteristics of forms and stages of hypothyroidism, hyperparathyroidism, hypoparathyroidism, diabetes and insipidus, adrenal insufficiency, obesity, gout.

Basics of therapeutic nutrition in kidney diseases. General characteristics of forms and stages of renal failure, nephrotic syndrome, glomerulonephritis, urolithiasis (uraturia, oxaturia, phosphaturia).

Basics of therapeutic nutrition in collagen diseases. General characteristics of forms and stages of rheumatism and rheumatoid arthritis.

Basics of medical nutrition during surgical intervention. Parenteral and tube feeding.

Topic 7. General principles of rational nutrition for pregnant women. Determination of a pregnant woman's need for organic substances. Rational individual diet of pregnant women. Culinary processing of products as a means of preserving nutritional value and better assimilation of nutrients. Peculiarities of nutrition of pregnant women with toxicosis. Therapeutic nutrition of pregnant women with anemia. Combination of drugs and diet during pregnancy. Preparation of a pregnant woman for lactation and feeding a child. List of foods that are recommended and excluded from the diet during pregnancy. Compilation of a one-day and weekly schedule in the first and second half of pregnancy.

Basics of rational nutrition for women who have breastfed children. Energy value of the daily diet during breastfeeding. A woman's diet during breastfeeding. Diet therapy as a means of preventing hypogalactia. Pharmacological treatment of women during breastfeeding. List of foods that are recommended and excluded from the diet during breastfeeding. Drawing up a one-day, weekly and long-term menu during breastfeeding.

Topic 8. Basics of rational nutrition for children of the first year of life. General principles of nutrition for children of the first year of life. The relationship between natural and artificial feeding. Nutrition and resistance

to infections, the possibility of enteral sensitization. Metabolic aspects of nutrition of children of the first year of life. The need of children in the first year of life in nutrients. Formulas of balanced nutrition for children of the first year of life.

Nutrient requirements of premature babies. Composition of colostrum and human milk. Changes in the composition of human milk during heat treatment. Cow's milk: chemical composition and nutritional value. Hygienic requirements for prepared milk. Normalization of cow's milk. Milk of other farm animals. Clinical monitoring of the quality of nutrition of a child of the first year of life.

Natural feeding. Difficulties and contraindications to breastfeeding. Technique and mode of breastfeeding. The concept of free feeding. Evaluation of the "sufficiency" of milk volume during natural feeding. Correction of nutrition during breastfeeding. Complementary food during natural feeding.

Artificial feeding. Milk mixtures for artificial feeding. Rules and techniques of artificial feeding. Correction of nutrition and supplementary food during artificial feeding. Mixed feeding.

The use of concentrates and preservatives in the nutrition of infants. Adapted products, the composition of which is as close as possible to human milk. Products for the organization of complementary feeding of children of the first year of life.

Features of feeding a newborn baby. Rational nutrition of a child aged 1 to 4 months. Nutrition of a child 4 - 8 months. Rules and terms of introduction of supplementary food. Nutrition of a child of 8-12 months.

Basics of rational nutrition for young children. General principles of nutrition for children from 1 to 3 years. Nutrient needs of young children. Features of culinary processing of food for young children. Dishes for baby food: milk formulas, cold dishes and snacks, first courses, second courses, fruit and vegetable juices and purees, sweet dishes and drinks. Vitamins and flavor additives.

Basics of rational nutrition for preschool children. Preschool children's need for nutrients. Organizational principles of developing food rations for preschool children. Organization and nutrition regimes of preschool children. Characteristics of dishes recommended for children 3-7 years old. Peculiarities of culinary processing of food for preschool children. Sanitary and hygienic requirements for food products used in preschool educational institutions. The use of industrial products, preserves and preservatives in the nutrition of preschool children. Compilation of one-day, weekly and long-term menus in the period from 3 to 7 years.

Basics of rational nutrition for schoolchildren. Nutrient needs of school-age children. Peculiarities of metabolism in adolescence. Volume and diet of school-aged children. School breakfasts. Healthy food for schoolchildren. Compilation of one-day, weekly and long-term menus for schoolchildren. Peculiarities of nutrition of schoolchildren during various sports. Peculiarities of nutrition of schoolchildren in pioneer camps and tourist trips.

Topic 9. Peculiarities of the metabolism of the elderly and senile. Need of elderly people in proteins, fats, carbohydrates, vitamins and minerals. Principles of building nutrition in the elderly and senile age. Diet in old age. The effect of calorie restriction on aging processes. Nutritional support for the elderly and senile. Lipotropic and antioxidant orientation of the nutrition of the elderly and senile.

Topic 10. Peculiarities of athletes' metabolism. Proteins, fats and carbohydrates in the athlete's diet. Metabolism of amino acids during exercise. Recommendations for athletes on the use of carbohydrate products. Ways to increase glycogen reserves in athletes during preparation for competitions. Vitamin provision of the diet of athletes. The body's need of athletes in mineral substances. Thermoregulation during physical exertion. Replenishment of electrolyte losses during exercise. Water is an important component of athletes' diet. Hydration before and after physical training. Selection of drinks for rehydration. The concept of basic nutrition and energy dietetics in sports. Products of increased biological value used in sports. Special sports nutrition products. Body weight correction of athletes through dietary manipulations.

Ways to increase the performance of athletes with the help of nutritional factors: bicarbonate and sodium citrate, creatine, branched amino acids, glutamine, arginine, ornithine, lysine, L-carnitine, ubiquinone, phosphates, choline, glycerin. Technology of using biologically active additives in sports. Biologically active additives of adaptogenic, actoprotective, antioxidant, anabolic, plastic, energy-providing, restorative and bioregulatory effects. General rules for the use of biologically active additives depending on the nature of the loads.

Basics of rational nutrition for young athletes. Physiological features of the body of young athletes. The role of micronutrients in the nutrition of young athletes. Liquid consumption. Common features of nutrition of representatives of various sports. Peculiarities of sportsmen's nutrition in cyclical, game, complex coordination sports, weightlifting and martial arts. Problems of nutrition in the preparatory, competitive and recovery periods. Recommendations regarding the diet before and after training. Drinking mode. Diets for athletes. Technology of preparing meals for sports nutrition.

Topic 11. The value of therapeutic and preventive nutrition. Types and rations of therapeutic and preventive nutrition. Milk in therapeutic and preventive nutrition. Vitamins in therapeutic and preventive nutrition. The use of pectin in therapeutic and preventive nutrition. Organization of provision of medical and preventive nutrition. Quality control of therapeutic and preventive nutrition.

11. Criteria and evaluation order of educational outcomes.

Scheme of accrual and distribution of points for full-time higher education applicants

Current testing and independent work Module 1											Total
Content module 1						Content module 2					60-100
T 1	T 2	T 3	T 4	T5	SM1 T 1-7	T8	T 9	T 10	T 11	SM2 T8-11	
3-5	3-5	3-5	3-5	3-5	15-25	3-5	3-5	3-5	3-5	18-30	

The criteria for evaluating the knowledge and skills of students of higher education from the educational component "Pharmacognosy with the basics of resource science" were developed in accordance with the "Regulations on the procedure for evaluating students' knowledge in the credit-modular organization of the educational process at the National University of Pharmacy". The evaluation of the success of a higher education student in the educational component is a rating, presented on a one-point scale and defined according to the ECTS system and the traditional scale adopted in Ukraine.

Evaluation of the current educational activity (carried out during each class) - test written control, control of theoretical knowledge, practical skills and abilities.

Evaluation (in points) is reflected in the calendar and thematic plans of laboratory classes.

Evaluation criteria	Points
<p>Theoretical training:</p> <ul style="list-style-type: none"> - showed in-depth knowledge of the theoretical material on the topic of the lesson, which is presented in the textbook, lecture texts and additional literature; - well completed the written homework on working out the questions and objects of the independent work; - gave comprehensive answers to the questions of initial knowledge control and received "5". <p>Practical training:</p> <ul style="list-style-type: none"> - solved situational problems / tests. - handed over a well-designed workbook to the teacher for checking. 	5
<p>Theoretical training:</p> <ul style="list-style-type: none"> - showed a good knowledge of the theoretical material on the topic of the lesson, which is presented in the textbook and lecture texts; - completed a written homework on working out the issues and objects of the independent work; - gave incomplete answers to the questions of initial knowledge control and received "4". <p>Practical training:</p> <ul style="list-style-type: none"> - solved situational problems / tests with minor errors. - handed over the completed workbook to the teacher for checking. 	4
<p>Theoretical training:</p> <ul style="list-style-type: none"> - showed knowledge of the theoretical material on the topic of the lesson in the amount that is considered necessary and sufficient to perform the practical part of the lesson; - completed a written homework on processing questions and objects of independent work with errors; - gave incomplete answers to the initial knowledge control questions and received a "3". <p>Practical training:</p> <ul style="list-style-type: none"> - solved situational problems / tests with errors. - handed over a workbook designed with minor errors to the teacher for checking. 	3

<p>Theoretical training: - did not show/showed knowledge of the theoretical material on the subject of the lesson in an amount that is not considered sufficient to perform the practical part of the lesson; - did not complete/completed written homework on processing questions with gross errors; - did not give/gave incomplete answers to questions 1-3 of the initial knowledge control.</p> <p>Practical training: - did not solve / solved situational problems / tests with gross errors. - handed over a workbook with major flaws to the teacher for checking.</p>	0-2
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If a higher education student is unprepared for a practical class, he can be admitted to the practical part of the class only after an individual conversation with the teacher on the subject of the class.

**Evaluation criteria
initial controls of practical classes on the basics of rational nutrition**

№ question	Evaluation criteria	Points
1	A full definition of the concept is given. or: The functions of nutrients are indicated. or: Foods that are sources of a specific nutrient. or: Characteristics of food types. or: Nutrition principles for a certain disease.	5
	A complete definition of the concept with minor errors is given. or: Nutrient functions are indicated with minor errors. or: Foods that are sources of a particular nutrient with minor errors. or: Characteristics of types of food with minor errors. or: Principles of nutrition for a certain disease with minor errors.	4
	A complete definition of the concept with errors is given. or: Nutrient functions are indicated with errors. or: Foods that are sources of a particular nutrient in error. or: Characteristics of types of food with errors. or: Principles of nutrition in a certain disease with errors.	3
2-3	Correct answers to 4 tests were provided.	5
	Correct answers were provided for 3 out of 4 tests.	4
	Correct answers were provided for 2 out of 4 tests.	3

Criteria for evaluating content modules 1-2 from the Basics of rational nutrition

№ question	Evaluation criteria	Points
1	A full definition of the concept is given. The functions of nutrients / symptoms of deficiency or excess in the body / food products that are sources of a certain nutrient / principles of nutrition in a certain disease are indicated.	5
	The definition of the concept is given. The functions of nutrients / symptoms of deficiency or excess in the body / food products that are sources of a certain nutrient / principles of nutrition for a certain disease with minor errors are indicated.	4
	The definition of the concept with errors is given. The functions of nutrients / symptoms of deficiency or excess in the body / food products that are sources of a certain nutrient / principles of nutrition in a certain disease with significant errors are indicated.	3
2	A full definition of the concept is given. The functions of nutrients / symptoms of deficiency or excess in the body / food products that are sources of a certain nutrient / principles of nutrition in a certain disease are indicated.	5
	The definition of the concept is given. The functions of nutrients / symptoms of deficiency or excess in the body / food products that are sources of a certain nutrient / principles of nutrition for a certain disease with minor errors are indicated.	4
	The definition of the concept with errors is given. The functions of nutrients / symptoms of deficiency or excess in the body / food products that are sources of a	3

	certain nutrient / principles of nutrition in a certain disease with significant errors are indicated.	
3	A complete description of the type of nutrition / principle of nutrition for a certain disease is given	5
	A description of the type of nutrition / principle of nutrition for a certain disease with minor errors is given.	4
	The characteristics of the type of nutrition / the principle of nutrition for a certain disease with significant errors are given.	3

**Evaluation criteria
initial controls of practical classes on the Basics of rational nutrition**

№ question	Evaluation criteria	Points
1	From the proposed list of food products for the correction of certain diseases / dietary supplements / types of food / nutrients, all the correct options are selected.	5
	From the proposed list of food products for the correction of certain diseases / dietary supplements / types of food / nutrients, an incomplete list of correct options was selected. Minor errors were made.	4
	From the proposed list of food products for the correction of certain diseases / dietary supplements / types of food / nutrients, an incomplete list of correct options was selected. Gross mistakes were made.	3
2	From the proposed list of food products for the correction of certain diseases / dietary supplements / types of food / nutrients, all the correct options are selected.	5
	From the proposed list of food products for the correction of certain diseases / dietary supplements / types of food / nutrients, an incomplete list of correct options was selected. Minor errors were made.	4
	From the proposed list of food products for the correction of certain diseases / dietary supplements / types of food / nutrients, an incomplete list of correct options was selected. Gross mistakes were made.	3

12. Forms of progress and semester supervision of academic achievements

Current control of theoretical and practical knowledge in the form of an oral, written and test survey using standardized methods for diagnosing knowledge, abilities and skills is carried out at each laboratory session in accordance with the specific goals of the topic and during the individual work of the teacher for topics that are not included in the structure of the lesson and are developed by the student of higher education independently.

Control of content modules - control of theoretical knowledge in the form of an oral, written and test survey of applicants for higher education, as well as practical skills in determining the identity and benignity of MPM. Control refers to knowledge and skills, both acquired in classes, and objects and topics developed independently by students of higher education.

Form of control - semester credit.

13. Methodological support

1. Curriculum of the educational component.
2. Work program of the educational component.
3. Calendar and thematic plans of lectures and laboratory classes.
4. Textbooks, workshops, manuals, methodical recommendations, etc.
5. Materials of computer presentations of lectures.
6. Methodical recommendations for practical classes, as well as independent work of students of higher education.
7. A list of theoretical questions for independent work of students of higher education.
8. List of questions and tasks for current control of knowledge and skills of higher education applicants.
9. List of theoretical questions and practical tasks for the control of meaningful modules.

14. Reading suggestions

The main reading suggestions

1. Sultaniyazovich Y. M., Shamshaddinovna A. Z., Alisherovna S. G. Definition of a Rational Diet Woman's Nutrition during Pregnancy. *World Bulletin of Public Health*. 2023. № 18. P. 76-81.
2. Monte C. M. G., Giugliani E. R. J. Recommendations for the complementary feeding of the breastfed child. *Jornal de pediatria*. 2004. № 80. P. s131-s141.
3. Nutrition-related health behaviours and prevalence of overweight and obesity among Polish children and adolescents / Wojtyla-Buciora P. et al. *Annals of Agricultural and Environmental Medicine*. 2013. № 20 (2).
4. Rational nutrition of modern human / Lupu L. D. M. et al. 4th International multidisciplinary scientific conference on social sciences and arts sgem. 2017. P. 573-578.
5. Organization Of Rational Nutrition of Athletes in Training and Competitive Activities // Sapparbaevna R. R. et al. *Specialusis Ugdymas*. 2022. № 2 (43). P. 3566-3568.

Supplementary reading suggestions

1. Early breastfeeding experiences of adolescent mothers: a qualitative prospective study / Smith P. H. et al. *International breastfeeding journal*. 2012. № 7. P. 1-14.
2. Pomohaibo K., Harmanpreet S. The role of the family, educational institutions and primary health care in the organization of rational nutrition and the prevention of overweight in children and adolescents . *Громадське здоров'я в Україні: проблеми та способи їх вирішення*. 2022. P. 219.
3. Assessment of nutritional habits and preferences among secondary school students / Duma-Kocan P. et al. *Roczniki Państwowego Zakładu Higieny*. 2017. № 68 (1).
4. Important determinants to take into account to optimize protein nutrition in the elderly: solutions to a complex equation / Dardevet D. et al. *Proceedings of the Nutrition Society*. 2021. № 80 (2). P. 207-220.
5. Ermatova S. U. The role of nutrition in the development of athletes'ability. *Current research journal of pedagogics*. 2021. № 2 (10). P. 86-90.
6. Zinovyeva E., Balynskaya N., Koptyakova S. Features of sanitary and epidemiological population welfare in monoprofile cities within the conditions of technogenic environment. *Padua Research Archive-Institutional Repository*. 2019. P. 54.
7. The effectiveness of worksite nutrition and physical activity interventions for controlling employee overweight and obesity: a systematic review / Anderson L. M. et al. *American journal of preventive medicine*. 2009. № 37 (4). P. 340-357.
8. Fieldhouse P. Food and nutrition: customs and culture. Springer, 2013.
9. ESPEN guidelines on definitions and terminology of clinical nutrition / Cederholm T. et al. *Clinical nutrition*. 2017. № 36 (1). P. 49-64.

15. Electronic resources, including the Internet

1. Website of the Department of Pharmacognosy and Nutriciology – www.cnc.nuph.edu.ua
2. Website of the NUPh library – <http://lib.nuph.edu.ua>
3. Electronic archive of the NUPh – <http://dspace.nuph.edu.ua>
4. Center for Distance Technologies of the National Academy of Sciences of Ukraine – pharmel.kharkiv.edu
5. NUPh. Online tests – <http://tests.nuph.edu.ua>
6. Vernadsky National Library of Ukraine – <http://www.nbu.gov.ua>
7. V.G. Korolenko Kharkiv State Scientific Library – <http://korolenko.kharkov.com>