FACULTY OF MEDICINE II

STUDY PROGRAM 0912.1 MEDICINE

DEPARTMENT OF PREVENTIVE MEDICINE

APPROVED
at the meeting of the Commission for Quality Assurance and Evaluation of the Curriculum in Medicine
Minutes No. 5 of 04.06.24
Chairman PhD, associate professor,
Pădure Andrei

APPROVED
at the Council meeting of the Faculty Medicine II
Minutes No. 8 of 23.04.24
Dean of the Faculty of Medicine II
PhD, associate professor,
Mircea Bețiu

APPROVED
at the meeting of the Discipline of hygiene
Minutes No. 8 of 29.02.2024
Head of the Discipline of hygiene, PhD, professor
Bahnarel Ion

SYLLABUS

HYGIENE

Integrated studies

Type of course: **Compulsory**

Curriculum developed by the team of authors:
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Radu Rusu, assistant professor

Chișinău, 2024

I. INTRODUCTION

- **General presentation of the discipline: the place and role of the discipline in the formation of the specific competences of the vocational / specialty training program**

Hygiene is a prophylactic medical science that primarily aims at promoting and improving the health of the individual and human collectives in relation with environment.

Hygiene plays an important role in the preparation of curative and preventive discipline. It aims to give to the students' knowledge on maintaining human health, disease prevention of infectious and non-infectious diseases, prolonging life. For successful implementation of preventive activity every physician should have knowledge on: impact of ambient environment factors on health; the measures of improving the environment, prevention of diseases, health maintenance.

Knowing the character of the usual environment of the Hospital (or other medium) on the body, the doctor will assess correctly the causes of illness, complications, prevention measures will apply effective treatment will solve the problems of work capacity and placement in the labour market.

All this is necessary for prevention activity in the doctor's curative practice. To instil discipline thorough knowledge required in the field of biology, chemistry, physics, geography and pre-university studies in the field of physiology, microbiology, biochemistry, physiopathology, therapy, surgery, endocrinology, infectious disease, etc. obtained his university studies.

- **Mission of the curriculum (aim) in professional training**

Hygiene is the medical science that studies the health and the factors that condition it. Its ultimate goal is to preserve and promote health. Hygiene studies the influence of environmental factors on human health and elaborates sanitation measures, normative and sanitary measures aimed to create an optimal hygiene environment for living and working.

- **Language (s) of the discipline:** English.
- **Beneficiaries:** students of second year of faculty Medicine II.

II. MANAGEMENT OF THE DISCIPLINE

Code of discipline		**F.03.O.024; F.04.O.036**	
Name of the discipline		**Hygiene**	
Person(s) in charge of the discipline		**Ion Bahnarel,** PhD, professor, **Ovidiu Tafuni,** PhD, assoc. prof. **Radu Rusu,** assist. prof.	
Year	**II**	Semesters	**III, IV**
Total number of hours, including:			**210**
Lectures	**60 (30/30)**	Practical hours	**30 (15/15)**
Seminars	**30 (15/15)**	Self-training	**90 (60/30)**
Form of assessment	**E**	Number of credits	**7 (4/3)**

III. TRAINING AIMS WITHIN THE DISCIPLINE

At the end of the discipline study the student will be able to:

- **At the level of knowledge and understanding**

- to know the basic notions about hygiene as a science, sanitation, prevention;
- to study environmental factors and understand their impact on the health of the human body;
- to make acquaintance with the research methodology in the field of the impact of the environmental factors to the health of human body;
- become acquainted with the methods of assessing and processing of special literature, developing of reports and presentations on the basis of the work carried out.
- to know the need for hygienic measures of environment protection, working conditions and rest, health protection of children and adolescents, participate in the elaboration of rational nutrition basics, expertise in food quality and habits of habitual insecurities;

- **At the of application level**

- to carry out laboratory work using appropriate methods and tools;
- to solve case studies & exercises;
- to be able to compile records, reports, presentations on the basis of the work carried out;
- to apply in practice the knowledge gained in daily work;
- to be able to argue their own opinion and asses various information in studying of human health.

- **At the of integration level**

- to appreciate the importance of hygiene in the context of Medicine;
- to possess the abilities to organize prevention, to provide information about ways of maintaining health;
- to assess the impact of environmental factors on patients' health;
- to be able to assess the importance of hygienic measures in the medicine and in the public health institutions and organised staffs (institutions, organizations, etc.).

IV. PROVISIONAL TERMS ANS CONDITIONS

Student of the second year requires the following:

- knowing of the teaching language;
- confirmed competences in science knowledge at lyceum level (biology, chemistry, physics);
- confirmed competences in science knowledge at university level (physiology, microbiology, biochemistry, physiopathology, therapy, surgery, endocrinology, infectious diseases etc.);
- digital competences (use of the Internet, document processing, electronic tables and presentations, use of graphics programs);
- ability in communication and team work;
- qualities - tolerance, compassion, autonomy.

V. THEMES AND ESTIMATE ALLOCATION OF HOURS

Lectures, practical lessons / seminars and self-training

No.	THEME	Number of hours		
		Lectures	Practical lessons, seminars	Self-training
1.	The need for knowledge of hygiene by doctors of different specialties. "One Health": contemporary approaches.	2		
2.	Food hygiene. Rational nutrition. Energy consumption. The energy value of the food ration.	2		
3.	Qualitative composition of the food ration. Proteins, lipids, carbohydrates. (Part 1)	2		
4.	Qualitative composition of the food ration. Vitamins, provitamins, mineral salts, prebiotics and probiotics.(Part 2)	2		
5.	Food quality and safety.	2		
6.	Individual and public food.	2		
7.	The basics of dietary nutrition. Providing dietary nutrition in ISMP (hospital food block, catering).	2		
8.	Studying individual nutrition.		2	4
9.	Assessing the correctness of the individual diet by the calculation method.		2	4
10.	Elaboration of distribution menus.		4	4
11.	Research on the content of vitamins in food. Appreciation of the vitamin value of the food ration. Control over the body's supply of vitamin "C".		2	
12.	Hygienic assessment of the quality of some food products (sanitary expertise of some of the main food products).		2	
13.	Food pathologies.	2		
14.	Food poisoning and their prophylaxis.	2		
15.	Food pathologies and intoxications, their prophylaxis. Research methods.		4	4
16.	The hygienic importance of water.	2		
17.	The chemical composition of water. Non-infectious water pathology.	2		
18.	Infectious water pathology.	2		
19.	Water supply.	2		
20.	Hygienic assessment of drinking water quality.		2	
21.	Methods of water conditioning.		2	
22.	Air hygiene. The hygienic importance of the physical factors of the air.	2		
23.	Chemical composition and air pollution.	2		
24.	Chemical factors in the air environment and their influence on the body. Air pollution with bacteria and dust. Express methods for the determination of chemicals in air. Determination of CO2 according to the Vinocuroff method.		2	
25.	Hygienic assessment of the microclimate in children's and medical institutions.		4	
26.	Hygienic assessment of ventilation and heating of different rooms.		2	

27.	Medical problems in climate change. Room lighting.	2		
28.	Hygienic bases of ventilation and heating.	2		
29.	Soil hygiene and sanitation of localities.	2		
30.	Hygienic appreciation of natural lighting in different rooms.		2	
31.	Hygienic appreciation of artificial lighting in different rooms.		2	
32.	Occupational hygiene - the object of studies. Occupational nausea, occupational diseases.	2		
33.	Work physiology.	2		
34.	Occupational stress.	2		
35.	Occupational hygiene in agriculture. Hygiene of pesticide use in agriculture.	2		
36.	Risk factors in the hospital environment in relation to the health of medical staff.	2		
37.	Physical and intellectual work. Functional changes in the body in the work process.		2	
38.	Medical care for industry workers. Notions about occupational diseases and intoxications. Prophylaxis of occupational diseases.		2	4
39.	Basics of radiation hygiene.	2		
40.	Chemical hygiene and toxicology.	2		
41.	Ionizing radiation. Principles of protection against the use of ionizing radiation.		2	4
42.	Hygiene of children and adolescents - the content and tasks of this discipline.	2		
43.	Research methods and assessment of the physical development of children and adolescents.		4	4
44.	Hygienic principles of design, planning and construction of institutions for children and adolescents.		2	
45.	Basics of preventive and current health surveillance.	2		
46.	Hygiene of medical institutions.	2		
47.	The sanitary-hygienic regime in hospitals. Prophylaxis of nosocomial infections.	2		
48.	Public Health Emergencies.	2		
49.	Preventive hygienic supervision. Expertise of hospital projects.		4	4
50.	Hygienic assessment of the location, systematization of units and specialized sections of hospitals.		4	4
51.	Sanitary hygiene in hospitals. Prophylaxis of in-hospital infections.		4	4
52.	Healthy lifestyle. Principles of health promotion.		4	50
		60	**60**	**90**
Total		**210**		

VI. OBJECTIVES AND CONTENT UNITS

Objectives	Content unit
Theme (chapter) 1. Intorduction in Hygiene. Nutrition hygiene (First part)	
• to define the basic concepts of general hygiene. • to know the methods of research on the environment and its action on health. • to know the apparatus and devices used in hygienic studies. • to apply the methods of research in the field of hygiene. • to integrate knowledge about promoting healthy lifestyles into everyday life. • to define the components of human energy consumption. • to know the methods for determining the energy consumption.	- Fundamental concepts of general hygiene. - Methods of research into the environment and its action on health. - Apparatus and devices used in hygienic studies. - Methods of doing research on hygiene. - Knowledge about promoting healthy lifestyles. - Parts of energy consumption in humans. - Methods of determining energy consumption.
Theme (chapter) 2. Nutrition hygiene (Second part)	
• to apply the principles of rational nutrition. hygienic requirements to it. • to demonstrate the principles of rational nutrition. hygienic requirements to it. • to demonstrate the importance of nutrition quality in the prevention of diseases. • to know the importance of vitamines, minerals in nutrition and determination of vitamin C in food products. • to integrate into daily life the knowledge about the importance of proper nutrition balance in nutrition. • to know the physiology and biochemistry of digestion. • to define the classification of food pathologies, food intoxications and food intoxication.	- Principles of rational nutrition. hygienic requirements to it. - Principles of rational nutrition. hygienic requirements to it. - Importance of nutritional quality in the prevention of diseases. - Knowledge of the importance of the proper balance of nutrients in the diet. - Methods of determination of vitamin C in different food products. - Methods of determination of body supply with vitamin C. - Investigation of cases of food intoxications and taking appropriate measures of prophylaxis. - Foodborne disease and its prophylaxis.
Theme (chapter) 3. Environmental hygiene	
• to define microclimate, time and climate in hygienic vision. • to define - air temperature, humidity, air velocity, atmospheric pressure its importance for thermoregulation. • to apply methods and apparatus for determination. • to know the hygienic importance of the wind of winds in the construction of children's and curative-prophylactic institutions.	- Microclimate, time and climate in hygienic vision. - Temperature, air humidity, its importance for thermoregulation. - Speed of air movement, atmospheric pressure its hygienic importance. Methods and apparatus for determination. - Particularities of thermoregulation in different pathological states, normalization of microclimate in these cases.

• to apply methods of research into the influence of microclimate on the human body. • to know the complex action of microclimate factors on the body. Methods of appreciation. • to apply air sampling methods for the determination of chemicals, dust and bacteria, air volume conditioning method, laboratory-express methods to investigate air pollution with noxious chemicals. • to know the theoretical bases necessary for the sanitary control of ventilation and room heating. • to apply laboratory instrumentation and calculation methods for ventilation and room heating control. • to strengthen the theoretical knowledge about pharmaceutical products. • to acquire the methods for determining the natural and artificial lighting (technical and calculation). • to take measures to improve the lighting of the rooms in question. • to acquire the physiological methods of appreciating the influence of illumination on the vision. • to take measures to prevent diseases caused by the use of non-qualitative water. • to apply the methods for determining the physical and chemical properties of water pollution with organic substances and methods of water disinfection. • to know and apply the methods of water quality conditioning, decanting and water filtration: the stages in the conditioning process. Coagulation water clarification; the factors that determine its efficacy, the choice of coagulant dose.	- Complex action of microclimatic factors on the body. Methods of appreciation. - The physiological and hygienic importance of the atmospheric air components. - Physical, chemical and bacteriological indications of room air pollution. - Evaluate the efficiency of ventilation and room heating. - To recommend and to advocate measures for the decontamination of air in hospital and pharmaceutical premises. - The physiological and hygienic importance of light. Hygienic requirements for lighting. - Indices that characterize the level of natural illumination: luminosity coefficient, natural illumination coefficient, incidence angle, opening angle, etc. - Indices that characterize the level of artificial illumination: direct luxmery, light power, calculated illumination, reflection coefficient and uniformity of illumination. - Norms of natural and artificial lighting in the sanitary, children's and living rooms. - Dependence of visual analyzer's main functions on illumination conditions (visual acuity, stability of clairvoyance, visual analyzer yield). -Systematize and strengthen students' knowledge of the importance of water in the spread of infectious and noninfectious diseases. - Physiological importance of water. Influence of chemical composition of water on population health, its epidemiological significance. - Methods of conditioning water quality. Water decanting and filtration: the stages in the conditioning process. Coagulation water clarification; the factors that determine its efficacy, the choice of coagulant dose. - Methods of water disinfection.
Theme (chapter) 4. Hygiene of the medical institutions	
• to know the methods of general expertise of hospital construction projects. • to appreciate from hygienically point of view, location and systematisation of the hospital.	- The importance of hospital hygiene in the complexity of population rehabilitation measures. - The physician's functions in the preventive and current sanitary inspection performed in hospitals. - Project notion, hygienic demands on the terrain, hospital location, inner systematization.

• to define the notion of nosocomial infections. organizing and ensuring the sanitary-hygienic regime in hospitals. • to know the measures to prevent nosocomial infections in hospitals. • to define radiation protection measures when using ionizing radiation in medicine. • to know the risk factors in the hospital environment in relation to the health of medical staff.	- The particularities of the internal systematization of maternity, the admissions section, the hospital salons, the surgery section, the operator block, the contagious diseases section. - Nosocomial infections, notion, classification, sources and conditions of spreading. -Specific and nonspecific measures for prophylaxis of nosocomial infections. - The objective methods of assessing the hygienic regime in hospitals. - Collecting and neutralizing solid waste and waste water from hospitals.
• **Theme (chapter) 5. Work hygiene**	
• to define what is occupational hygiene and research methods. • to know the influence of the work process on the functional state of the body. • to know the characteristic of the main professional noxes. • to apply the methods of determining overloading organs and systems of the body during work. • to know the peculiarities of powder, noise of noise, vibration, ultrasound and their action on the body. • to define what are the industrial toxins. • to know and apply the means of individual protection.	- Influence of the work process on the functional state of the organism. - The characteristic of the main professional noxes - Overloading body organs and systems during work. - Dust. Classification and particle features. - Noise, vibration, ultrasound and their action on the body. - General Characteristics of Industrial Toxicity. - Personal protective equipment.
Theme (chapter) 6. Hygiene of children and adolescents	
• to know the methods of determining the level of individual physical development and the group of children and adolescents. • to know the methods of establishing the health groups. • to know the hygienic aspects of the curative activity of doctors in institutions for children and adolescents. • to develop a set of sanitary-hygienic recommendations for improving the health of children and adolescents	- Hygiene of children and adolescents, notions, methods of determining the level of individual physical development and the group of children and adolescents. Health groups. Laws and standards of children growth - Hygienic aspects of the curative activity of doctors in institutions for children and adolescents. - Arrangement, location and systematization of institutions for children and adolescents. - The hygienic bases of the daily regime and the instructive-educational process. - Sanitary-hygienic recommendations for improving the health of children and adolescents.

VII. PROFESSIONAL (SPECIFIC (SC)) AND TRANSVERSAL (TC) COMPETENCES AND STUDY FINALITIES

Professional (specific) (SC) competences

SC1. Responsible execution of professional tasks with the application of the values and norms of professional ethics, as well as the provisions of the legislation in force.
SC2. Adequate knowledge of the sciences about the structure of the body, physiological functions and behavior of the human body in various physiological and pathological conditions, as well as the relationships between health, physical and social environment.
SC4. Promoting a healthy lifestyle, applying prevention and self-care measures.
SC5. Interdisciplinary integration of the doctor's activity in a team with efficient use of all resources.
SC6. Carrying out scientific research in the field of health and other branches of science.
SC8. Carrying out the pedagogical and methodical-didactic activity within the technical and professional higher education institutions in the field of health.

Transversal competences (TC)

TC1. Autonomy and responsibility in the activity.
TC3. Achieving interaction skills and social responsibility.

Study finalities

- To educate the population in the sense of a healthy life through a balanced diet, activity and nutrition.
- To identify the elements of air hygiene.
- To analyze and interpret drinking water quality indices.
- To monitor the sanitary-hygienic regime in hospitals and residues in medical institutions.
- To apply measures to prevent nosocomial infections.
- To identify and understand the importance of hygiene in human habitat.
- To ensure safety during work.
- To evaluate one's own health.
- To explain and interpret the general norms of physical and mental development of children and young people.
- To model the hygienic regime of activity and rest.
- To recommend measures to protect health and prevent illnesses.
- To solve situational problems and to draw conclusions.
- To use various hygienic techniques and laboratory methods to carry out professional activities, to investigate, to interpret the results and to develop the complex of prophylactic measures to be able to assess the place and role of general hygiene in the practical training of the student.
- To be competent to use the knowledge and methodology of general hygiene in everyday practice.
- To be able to implement the knowledge gained in the research activity.
- To be competent to use critically and with confidence the scientific information obtained using the new information and communication technologies.

VIII. STUDENT'S SELF-TRAINING

No.	Expected product	Implementation strategies	Assessment criterias	Implementation terms
1	Work with information sources	-carefully reading the lecture or the material in the manual on the subject.	the ability to extract the essence. interpretive abilities	During the semester

		-Reading questions on the topic, which requires reflection on the subject. -getting acquainted with the list of additional information sources. -selecting the essential content. -formulating generalizations and conclusions about the importance of the subject.	the volume of work	
2	Work with practice notebook	- information analysis on the lecture topic and manual. - solving consecutive tasks. - formulating the conclusions at the end of each lesson. - verifying the end of the lesson.	The volume of work. Solving the case problem. ability to formulate conclusions	During the semester
3	Applying of different learning techniques		The volume of work. the degree of perception of the essence. the quality of the conclusions. forming personal attitude.	During the semester
4	Work with On-line sources	Learning on-line materials from department's site	Visit of different electronic on-line sources.	During the semester
5	Preparing of presentations	selecting the research theme. establishing the plan, the terms of presentation, and the components of the PowerPoint presentation. theme, purpose, results, conclusions. practical applications. reviews	The volume of work. the degree of perception of the essence. the quality of the conclusions. forming personal attitude. the ability to extract the essence. ways of graphic presentation.	During the semester

IX. METHODOLOGICAL SUGGESTIONS FOR TEACHING-LEARNING-ASSESSMENT

- ***Teaching and learning methods used***

General Hygiene discipline is taught in the classic way: with theoretical lectures and practical work. The lectures will be presented by certified staff. During practical work, students will study the

influence of environmental factors (natural and manmade) on the human body using specific laboratory methods on specific topics, as well by using technical equipment. The Department reserves the right to conduct a part of practical work in interactive manner as following: heuristic conversation, case-problem solving, brainstorming, group work, individual study, work with textbook and text, debate, role play, simulation, interactive listening etc.

- ***Applied teaching strategies / technologies***

Brainstorming, Brainwriting, the Round Table, Group interview, Conference, Case-problem, Focus-group technique, Multi-voting, Cube technique etc.

- ***Methods of assessment*** *(including the method of calculation of final mark)*

Current: front and / or individual control via:
(a) the application of docimological tests,
(b) solving problems / exercises,
(c) analysis of case-problems
(d) playing role-games on the discussed topics.
(e) examination test.

Final: Exam.

The final grade will consist of the average annual grade from 6 control papers (3 in each semester) and 2 grades for the individual work done by students (one grade in each semester) (share 0.5) and the final test in the system computerized (share 0.5).

Methods of mark rounding at different assessment stages

Intermediate marks scale (annual average, marks from the examination stages)	National Assessment System	ECTS Equivalent
1,00-3,00	2	F
3,01-4,99	4	FX
5,00	5	E
5,01-5,50	5,5	
5,51-6,00	6	
6,01-6,50	6,5	D
6,51-7,00	7	
7,01-7,50	7,5	C
7,51-8,00	8	
8,01-8,50	8,5	B
8,51-9,00	9	
9,01-9,50	9,5	A
9,51-10,0	10	

The average annual mark and the marks of all stages of final examination (computer assisted, test, oral) – are expressed in numbers according to the mark scale (according to the table), and the final mark obtained is expressed in number with two decimals, which is transferred to student's record-book.

Absence on examination without good reason is recorded as "absent" and is equivalent to 0 (zero). The student has the right to have two re-examination in the failed exam.

X. RECOMMENDED LITERATURE:

- A. Compulsory:

1. Ostrofeţ Gh., Groza L., Cuzneţov L. Hygiene (practice book). Chişinău. 2009. 240 pag.
2. Doroftei Sorina, Vlaicu Brigitha, Petrescu Cristina, Putnoky Salomeia, Fira-Mladineascu Corneluţa. The hygiene. Lito UMF Timişoara. 2003. 375 pag.
3. Duca Gheorghe, Scurlatov Yurii. Ecological chemistry. Chişinău. 2002. 289 pag.

- B. Additional:

4. Guidelines for drinking-water quality. Second edition. Volume 1. Recommendations. World Health Organization Geneva. 143 pag.
5. Joint FAO/WHO Food Standards Programme Codex Alimentarius Commission. Codex Alimentarius (Food Hygiene Basic Texts). Third Edition. Food And Agriculture Organization Of The United Nations World Health Organization. 2003. 68 pag.
6. Joint FAO/WHO Food Standards Programme Codex Alimentarius Commission. Codex Alimentarius (Food Import And Export Inspection And Certification Systems. Combined Texts). Second Edition. Food And Agriculture Organization Of The United Nations World Health Organization. Rome, 2005.76 pag.
7. Joint FAO/WHO Food Standards Programme. Codex Alimentarius Commission. Procedural Manual. Fifteenth Edition. Who Food And Agriculture Organization Of The United Nations. Rome, 2005. 162 pag.
8. WHO Regional Office for Europe Copenhagen. European food and nutrition policies in action. Edited by Nancy Milio and Elisabet Helsing. WHO Regional Publications, European Series, No. 73. 176 pag.
9. Understanding. The Codex Alimentarius. Revised And Updated. Who Food And Agriculture Organization Of The United Nations Rome, 2005.39 pag.
10. WHO. Publications. Food Safety. 36 pag.
11. Food Safety Issues. Food technologies and public health. Food Safety Unit. WHO. 1995.23 pag.
12. Food Safety Issues. International Conference On Nutrition. A Challenge Ti The Food Safety Community. Food Safety Unit. WHO. 1996. 22 pag.
13. IRPTC. Chemical safety. 1984. 269 pag.