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|  | CD 8.5.1 DISCIPLINE SYLLABUS FOR UNIVERSITY STUDIES | Edition: | 10 |
| | | Date: | 10.04.2024 |
| | | Page 1/12 | |

FACULTY OF MEDECINE

STUDY PROGRAM 0912.1 MEDICINE

**DEPARTMENT OF INTERNAL MEDICINE
DISCIPLINE OF GASTROENTEROLOGY**

APPROVED

at the meeting of the Commission for Quality Assurance and Evaluation of the Curriculum in Medicine

Minutes No. 7 of 17.06.24

Chairman PhD, professor:

Andrei Pădure



APPROVED

at the Council meeting of the Faculty of Medicine

Minutes No. 10 of 18.06.24

Dean of Faculty PhD, professor

Gheorghe Plăcintă



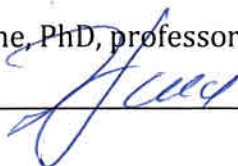
APPROVED

approved at the meeting of the Discipline of gastroenterology

Minutes No. 9 of 17.05.2024

Head of Discipline, PhD, professor

Eugen Tcaciuc



SYLLABUS

NUTRITION

Integrated studies

Type of course: **optional**

Syllabus elaborated by the authors:

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Chişinău, 2024



**CD 8.5.1 DISCIPLINE SYLLABUS
FOR UNIVERSITY STUDIES**

| | |
|------------------|-------------------|
| Edition: | 10 |
| Date: | 10.04.2024 |
| Page 2/12 | |

I. INTRODUCTION

- Nutrition is an integrative, interdisciplinary medical discipline, the study of which at the university level will allow the creation of the necessary skills to support a rational and correct nutrition program in different living conditions and activities, as well as in certain pathologies where the role of rational/dietary nutrition is defining. The need to study nutrition and dietary issues is important because nutrition is the basis of health, while proper diet is a significant part of treatment in many diseases and influences the health and quality of life of patients. The discipline studies the principles of rational nutrition and measures of prophylaxis in various pathologies or where nutrition is a causative factor or involved in the progression of a disease. Thus, the main compartments of the discipline are the basics of nutrition, assessment of nutrition and the principles of prescribing a proper diet in various pathologies. Nutrition is closely related to such fundamental disciplines such as physiology and biochemistry, but also other medical disciplines such as internal medicine, gastroenterology, nephrology, endocrinology, cardiology, rheumatology, oncology, surgery, anaesthesiology, and resuscitation.
- Mission of the curriculum (aim) in professional training
Consolidation of basic knowledge related to rational and dietary nutrition in different living conditions and activities, as well as in certain pathologies where the role of rational nutrition is defined, with their fulfilment in practice by creating skills in assessing nutrition in various pathologies and creating a rational food program - defining elements in the training of any doctor.
 - Language (s) of the discipline: Romanian, Russian, English, French;
 - Beneficiaries: students of the 5th year, Faculty of Medicine.

II. MANAGEMENT OF THE DISCIPLINE

| | | | |
|---------------------------------------|-----------|-------------------------------|-----------|
| Code of discipline | | S.10.A.090.2 | |
| Name of the discipline | | Nutrition | |
| Person(s) in charge of the discipline | | Eugen Tcaciuc, PhD, professor | |
| Year | 5 | Semester/Semesters | 10 |
| Total number of hours, including: | | | 30 |
| Lectures | 10 | Practical/laboratory hours | 10 |
| Seminars | - | Self-training | 10 |

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|---|--|------------------|-------------------|
|  | CD 8.5.1 DISCIPLINE SYLLABUS FOR UNIVERSITY STUDIES | Edition: | 10 |
| | | Date: | 10.04.2024 |
| | | Page 3/12 | |

| | | | |
|--------------------|----------|-------------------|----------|
| Form of assessment | E | Number of credits | 1 |
|--------------------|----------|-------------------|----------|

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:**
 - consolidation of basic knowledge in dietetics, classical principles and concepts of rational nutrition;
 - studying the stages of assessing the patient's nutritional status;
 - to know the contemporary methods of investigation, necessary for nutritional assessment;
 - understanding the main nutritional diseases and prophylaxis principles;
 - to identify endemic diseases, caused by dietary insufficiency or surplus of micronutrients;
 - study of theoretical information about the dietary habits of the patient in accordance with the given disease. Comprehension of basic etiopathogenetic mechanisms of a disease and rational, obligatory diets used in holistic therapy;
 - to recognize the main mechanisms that contribute to the infliction of biochemical and metabolic disturbances, to the development of changes in the acid-base balance and functions of the given organ (system) and respectively the dietary possibilities for their correction;
 - to assess the principles of nutrition for prophylaxis of chronic pathologies;
 - to know the principles of oral, enteral and parenteral nutrition of critically ill patients;
 - to be aware of specific diets for various diseases (metabolic, endocrine, gastroenterological, hepatological, cardiological, rheumatological, nephrological);
 - to possess the methods of creating the distribution menus in a diet;
 - to remember the principles of dietary nutrition of patients with various diseases;
 - to know the possibilities of creating a diet in outpatient and inpatient conditions

- **at the application level:**
 - assessment of nutritional status: anthropometric indices - height, body mass, waist and thigh circumference; determination of body mass index;
 - calculation of basal metabolism and energy needs depending on the activities performed;
 - calculating the daily nutritional needs (proteins, lipids, fats) according to energy expenditure;
 - elaboration of an individual diet according to the respective pathology (metabolic, endocrine, gastroenterological, hepatological, cardiological, rheumatological, nephrological);
 - organizing the dietary regime for the patient in outpatient, inpatient conditions;
 - appreciation of the health importance of foods included in a patient's menu;
 - developing recommendations for the inclusion or exclusion of certain foods in the diet of a healthy or diseased person;
 - elaboration and monitoring of enteral and parenteral nutrition;
 - monitoring dietary nutrition in critical conditions.



CD 8.5.1 DISCIPLINE SYLLABUS FOR UNIVERSITY STUDIES

Edition: 10

Date: 10.04.2024

Page 4/12

- **at the integration level:**
 - appreciation of the importance of rational nutrition in the context of general medicine and integration with related medical disciplines;
 - formation of a major attitude towards the curative value of a well-balanced diet, since no drug treatment program will be successful if the particular patient is not nourished rationally and risk factors are not avoided;
 - development of practical skills in assessing the nutritional state of a patient and elaboration of the patient's diet;
 - analysis of practical mistakes of an irrational treatment made by colleagues in previous stages and identification of correction methods;
 - highlighting the importance of rational nutrition, balanced in terms of energy and quality of basic nutrients, for the prophylaxis or treatment of various diseases;
 - integration of theoretical knowledge and practical skills on the issue of the importance of nutrition on health and the evolution of various pathologies;
 - possessing skills in working with colleagues and specialists in the field of rational nutrition for patients with various diseases.

IV. PROVISIONAL TERMS AND CONDITIONS

The study of Nutrition aims to form a generation of doctors who comprehend the importance of rational nutrition for the treatment of different diseases according to the pathogenetic mechanisms involved in the generation of a pathology. In many conditions, nutrition is an important therapeutic factor, sometimes the only one, equivalent to the best medication. Dietary regimes must first respect the principles of rational nutrition, to which are added the dietary peculiarities in the respective pathology. Thus, nutrition is an important component in the complex therapy of the patient. Therapeutic diet in each disease is individualized according to the complexity of metabolic changes. In some diseases, such as digestive, metabolic, atherosclerosis, obesity, diabetes, and gout, diet is one of the most important corrective methods needed for treatment, as well as stopping the progression of the disease.

Rational nutrition, therefore, has a prophylactic and therapeutic character, so knowing the principles of nutrition in various diseases is an important goal in the training of doctors of any specialty. For a good understanding of the Nutrition course, deep knowledge in the field of disciplines studied in previous years is necessary (medical semiology, internal medicine, normal and pathological physiology, hygiene, surgery, oncology, endocrinology, etc.).

V. THEMES AND ESTIMATE ALLOCATION OF HOURS

Lectures, practical hours/ laboratory hours/seminars and self-training

| No. d/o | THEME | Number of hours | | |
|------------|---|-----------------|--------------------|-------------------|
| | | Lectures | Practical hours | Self- training |
| 1. | Introduction in nutrition. Rational nutrition and diets. Assessment of nutritional status. Principles of dieting. | 2 | 2 | 2 |



**CD 8.5.1 DISCIPLINE SYLLABUS
FOR UNIVERSITY STUDIES**

Edition: 10

Date: 10.04.2024

Page 5/12

| No. d/o | THEME | Number of hours | | |
|--------------|--|-----------------|--------------------|-------------------|
| | | Lectures | Practical hours | Self- training |
| | Macro- and micronutrients. | | | |
| 2. | Nutrition in cardiovascular diseases and atherosclerosis, metabolic syndrome, and dyslipidaemia. | 2 | 2 | 2 |
| 3. | Principles of dietary nutrition in diseases of the digestive and hepatobiliary system. | 2 | 2 | 2 |
| 4. | Nutrition in endocrine and metabolic diseases (obesity, diabetes mellitus, gout, uric and oxalic diathesis). | 2 | 2 | 2 |
| 5. | The principles of enteral and parenteral nutrition in critical states. | 2 | 2 | 2 |
| | | 10 | 10 | 10 |
| Total | | 30 | | |

VI. PRACTICAL TOOLS PURCHASED AT THE END OF THE COURSE

Mandatory essential practical tools are:

- General examination to assess nutritional status;
- General inspection of the patient with the identification of clinical signs and symptoms characteristic for obesity and malnutrition;
- Clinical assessment of nutritional status in patients with malabsorption syndrome, chronic pancreatitis, MAFLD, cirrhosis (anthropometric measurements - body mass, height, BMI, waist circumference, thigh, skin fold on triceps, hand resistance);
- Determination and interpretation of changes in blood count, biochemical indices, acid-base balance characteristics;
- Interpretation of laboratory test results characteristic for nutritional disorders.
- To draw up the plan of paraclinical investigations for a patient with nutritional disorders;
- Evaluation of relevant data (anthropometric, body composition) in order to achieve optimal dietary recommendations;
- Assessment and monitoring of nutritional status, nutritional intake and therapy results using available methods, as well as interpretation of the information collected;
- To apply different methods of assessment in the elaboration of a nutritional diagnosis in patients with various diseases;
- Elaboration of an individualized prophylactic and curative nutritional intervention plan in different pathologies;
- To make dietary syntheses with the indication and correct prescription of the diet in different pathologies
- To complete the medical documentation according to the legislation in force

Note: The essential practical tools characteristic of the discipline, obligatory to be acquired by each student during the module, will be listed. These will serve as a basis for the stage of evaluating practical skills and will constitute their portfolio per study program.



**CD 8.5.1 DISCIPLINE SYLLABUS
FOR UNIVERSITY STUDIES**

Edition: 10

Date: 10.04.2024

Page 6/12

VII. OBJECTIVES AND CONTENT UNITS

| Objective | Content units |
|---|--|
| Theme (chapter) 1. Introduction in nutrition. Rational nutrition and diets. Assessment of nutritional status. Principles of dieting. Macro- and micronutrients. | |
| <ul style="list-style-type: none">• to define the fundamental concepts of human nutrition;• to understand the role of nutrients and biologically active substances in human nutrition, the importance of various foods;• to know the principles of dieting;• to apply the knowledge acquired in the evaluation of prophylactic and curative nutritional interventions;• to integrate the knowledge and skills obtained in the evaluation of the nutritional status;• to possess the research methods in the evaluation of the nutritional status;• to demonstrate skills of analysis and systematization for rational and dietary nutrition;• to integrate the theoretical knowledge on human nutrition in the activity of health promotion. | <ul style="list-style-type: none">• The science of nutrition;• Nutrients with energy value;• The biological value of food and health;• Dietary regime;• Energy consumption of the human body and its study methods;• Characteristics of nutrients;• Proteins and their functions in the body, products with maximum protein content;• Lipids, the physiological role of saturated and unsaturated fats, the main sources of exogenous and endogenous lipids, the fundamental sources of fats;• Carbohydrates as the main source of energy. Daily norms of protein, lipids and carbohydrates;• The role of vitamins, minerals, and water for the body. Recommended daily requirements;• Definition of a balanced diet and the correlation between its components;• Basic diets approved by medical practice. |
| Theme (chapter) 2. Nutrition in cardiovascular diseases and atherosclerosis, metabolic syndrome, and dyslipidaemia. Principles of dietary nutrition in diseases of the digestive and hepatobiliary system. | |
| <ul style="list-style-type: none">• to know the diseases of cardiovascular and digestive system;• to apply the principles of rational nutrition in cardiovascular and digestive system diseases;• to integrate the knowledge and skills acquired in treating cardiovascular and digestive system diseases;• to apply diets in various pathologies of the cardiovascular system, atherosclerosis and in the metabolic syndrome and in gastroenterological pathologies. | <ul style="list-style-type: none">• Acquiring information about the etiopathogenesis, clinics and treatment of cardiovascular diseases and nutritional implications for their prevention, therapy and improvement.• Familiarization with education programs for nutrition in the main diseases of the cardiovascular system, atherosclerosis. Metabolic syndrome. |



**CD 8.5.1 DISCIPLINE SYLLABUS
FOR UNIVERSITY STUDIES**

Edition: 10

Date: 10.04.2024

Page 7/12

| Objective | Content units |
|---|--|
| | <ul style="list-style-type: none">• Understanding the role and place of nutrition in the prevention and treatment of diseases of the cardiovascular system.• The role of cholesterol in the onset of atherosclerosis - the main cause for development of ischemic heart disease.• The pathogenetic mechanisms of atherosclerosis; the international possibilities of the diet 10, and its physiologically balanced content.• Diet and its application to different stages of myocardial infarction.• High blood pressure and diet. Basic dietary recommendations in cardiovascular pathologies• Acquiring information about the etiopathogenesis, clinic and treatment of some diseases of the digestive system and about the nutritional implications in their prevention, therapy, and improvement.• Familiarization with education programs for nutrition in the main diseases of the digestive system.• Diet and its application to different stages of gastrointestinal pathology.• Diet in hepato-pancreatic pathology, general characteristics and its variants, basic practical indications. |
| Theme (chapter) 3. Nutrition in endocrine and metabolic diseases (obesity, diabetes mellitus, gout, uric and oxalic diathesis). The principles of enteral and parenteral nutrition in critical states. | |
| <ul style="list-style-type: none">• to know metabolic and endocrine diseases;• to apply the principles of dietary nutrition in metabolic and endocrine diseases;• to integrate the knowledge and skills acquired in metabolic and endocrine diseases;• to define the notion of enteral and parenteral nutrition;• to apply theoretical and practical knowledge in critical states;• to integrate the knowledge and skills acquired in the critical states. | <ul style="list-style-type: none">• Acquiring information about the etiopathogenesis, clinics and treatment of metabolic and endocrine diseases, about the nutritional implications in their prevention, therapy, and improvement.• Familiarization with nutrition educational programs in major diseases. |



**CD 8.5.1 DISCIPLINE SYLLABUS
FOR UNIVERSITY STUDIES**

Edition: 10

Date: 10.04.2024

Page 8/12

| Objective | Content units |
|-----------|---|
| | <ul style="list-style-type: none">• Understanding the role and place of nutrition in the prevention and treatment of metabolic and endocrine diseases.• The objectives of the diet and the general principles of nutrition in diabetes, the assessment of caloric needs.• The recommended diets in obesity. Caloric value and goals of diet therapy. Food indications and contraindications in the diet of the obese.• Diet therapy in metabolic diseases. Diets used in these pathologies and their characteristics.• Understanding the scientific foundations of nutritional recommendations in enteral and parenteral nutrition. |

VIII. 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 according to legislation in force.
- SC2. Adequate knowledge of the sciences about the structure of the body, functions and behaviour of the human body in various physiological and pathological conditions, as well as the relationships between health, physical and social environment.
- SC3. Understanding clinical situations by developing a method for diagnosis, treatment and rehabilitation in various situations and selecting appropriate therapeutic procedures for them, including emergency medical care.
- 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.

✓ **Transversal competencies (TC)**



CD 8.5.1 DISCIPLINE SYLLABUS FOR UNIVERSITY STUDIES

Edition: 10

Date: 10.04.2024

Page 9/12

- TC1. Autonomy and responsibility during work.
- TC2. Achieving interaction skills and social responsibility.

✓ Study finalities

Upon completion of the course, the student will be able to:

- To know: the basics of human nutrition
- To be able to appreciate the nutritional value of different diets.
- To know the role of various foods in healthy eating in patients with various pathologies.
- To be able to appreciate a patient's actual diet and nutritional status.
- To apply optimal methods of ensuring dietary nutrition depending on the nutritional status and diagnosis of the patient
- To apply the various ways of food prophylaxis for non-communicable diseases.
- To know the principles of prophylactic nutrition for patients with various pathologies where the role of diet is essential.
- Apply enteral and parenteral nutrition correctly in critical conditions.
- To be competent to prescribe a personalized diet to patients with various pathologies.

Note. Discipline finalities (are deduced from the professional competencies and the formative valences of the informational content of the discipline).

IX. STUDENT'S SELF-TRAINING

| No. | Expected product | Implementation strategies | Assessment criteria | Implementation terms |
|-----|-----------------------------------|---|---|-----------------------|
| 1. | Work with informational resources | <p>Read the lecture and the material in the textbook to the theme carefully.</p> <p>Read questions on the subject, which require a reflection on the subject.</p> <p>To get acquainted with the list of additional informational sources on the topic.</p> <p>Select the source of additional information for that theme.</p> <p>Reading the text entirely, carefully and writing the essential content.</p> <p>Wording of generalizations and conclusions regarding the importance of the theme / subject.</p> | Ability to extract the essentials; interpretative skills; the volume of work. | Throughout the module |



**CD 8.5.1 DISCIPLINE SYLLABUS
FOR UNIVERSITY STUDIES**

| | |
|-------------------|-------------------|
| Edition: | 10 |
| Date: | 10.04.2024 |
| Page 10/12 | |

| | | | | |
|----|--|---|--|------------------------------|
| 2. | Work with on-line material | Studying on-line materials on the WEB page of the discipline and on other sites with specialized databases and literature. | Presentation of results in practical lessons and seminars | Throughout the module |
| 3. | Application of different methods of learning | Additional documentation in the library, - Work with online materials - Study according to the textbook - Documentation on specialized electronic platforms - Consultations Other activities | The volume of work, the level of insight into different subjects, the level of scientific argumentation, the quality of the conclusions, the elements of creativity, the demonstration of the understanding of the problem, the demonstration of the clinical reasoning, the practical abilities, the formation of the personal attitude | Throughout the module |
| 4. | Examination of patients during practical lessons and night shifts. | Patient examination, correct assessment of the data obtained from the patient's examination, from the laboratory and instrumental examination; creating a rational dietary plan. | Correct formulation and argumentation of the patient's diagnosis, investigation plan and dietary treatment plan. | Daily, throughout the module |
| 5. | Preparation and presentation of the essays | Selecting the theme of the presentations / reports and the terms of the achievement. | The volume of work, the degree of penetration in the essence of the presentation / essay, the level of argumentation, the quality of the conclusions, the elements of creativity, the formation of the personal attitude, the graphic presentation, the way of presentation. | Throughout the module |
| 6. | Study and analysis of human nutrition documents | In-depth study of some documents on human nutrition. Analysis of the studied materials. Formulation of the main conclusions based on the analysed materials | Materials analysis. Drawing conclusions. | Throughout the module |

X. METHODOLOGICAL SUGGESTIONS FOR TEACHING-LEARNING-

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|---|--|-------------------|-------------------|
|  | CD 8.5.1 DISCIPLINE SYLLABUS FOR UNIVERSITY STUDIES | Edition: | 10 |
| | | Date: | 10.04.2024 |
| | | Page 11/12 | |

ASSESSMENT

- **Teaching and learning methods used**

The discipline of **Nutrition** is taught classically: with lectures and practical lessons. At the lectures, the theoretical course will be taught. Practical lessons consist of: The student's practical work - the examination of patients with the prescription of specific dietary recommendations.

The practical lessons discuss and analyze the most important chapters of dietetics according to the curriculum. The lesson takes the form of a discussion, during which the teacher appreciates the students' knowledge, and explains the unclear material. At the end of each chapter discussed, the reader generalizes.

The didactic and research activity consists of the preparation by the students of the reports from various domains of Nutrition, illustrative materials, synthesis reports, participation with communications at clinical conferences, scientific and practical conferences etc.

- **Applied (specific to the discipline) teaching strategies/technologies**

Exposure, interactive lecture, heuristic conversation, problem-solving, brainstorming, group work, individual study, work with textbook and scientific text, debate, problem-solving, role play, simulation, and interactive listening. "Group interview"; "Case study"; "Round table", "Working in pairs", "Clinical project".

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

Current: frontal and/or individual control by:

- discussion;
- analysis of clinical cases;
- solving the problems/clinical cases;
- application of docimologica tests;
- control works.

Final: Exam

Method 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 | |

| | | | |
|---|--|-------------------|-------------------|
|  | CD 8.5.1 DISCIPLINE SYLLABUS FOR UNIVERSITY STUDIES | Edition: | 10 |
| | | Date: | 10.04.2024 |
| | | Page 12/12 | |

| | | |
|-----------|-----|---|
| 5,51-6,0 | 6 | D |
| 6,01-6,50 | 6,5 | |
| 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 the 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 numbers 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-examinations for the failed exam.*

XI. RECOMMENDED LITERATURE:

A. Compulsory :

1. The course
2. Croitoru Cătălina, Ciobanu Elena. Ghid de bune practici: Alimentație rațională, siguranța alimentelor și schimbarea comportamentului alimentar. Chișinău, 2019, 161 p.
3. Vasilachi Georgeta. Alimentatia omului sanatos si a omului bolnav. Chisinau, 2008
4. Mocan Mihaela. Medicină internă: Note de curs pentru specializarea nutriție și dietetică. Editura medicală universitară "Iuliu Hațieghanu", Cluj-Napoca, 2020

B. Additional

1. Olinic Maria. Semiologie medicală: Note de curs pentru specializarea nutriție și dietetică. Editura medicală universitară "Iuliu Hațieghanu", Cluj-Napoca, 2018
2. Creff A.F. Manual de dietetică în practica medicală curentă, Ed. Polirom 2010.