

**DANYLO HALYTSKY LVIV NATIONAL MEDICAL UNIVERSITY**  
**Department of Endocrinology**



**"APPROVED"**  
First Vice-Rector on  
Scientific and Pedagogical Work  
Associate Professor Iryna SOLONYNKO  
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**DISCIPLINE PROGRAM**

**OC 25.2 Endocrinology**

**Second (master's) level of higher education**  
**Field of Knowledge 22 "Healthcare"**  
**Specialty 222 "Medicine"**  
**Faculty, year: Medical 4<sup>th</sup> year**

Discussed and approved  
at the educational-methodical meeting  
of the Department of Endocrinology  
Minutes No 13 dated "27" April 2023  
Head of the Department  
Prof. Alina URBANOVYCH

Approved  
by the Profile Methodical Board on  
General Medicine Disciplines  
Minutes No 2 dated 04 May 2023  
Head of the Board  
Prof. Olena RADCHENKO

The discipline program "Endocrinology" was developed and imported at the Department of Endocrinology of Danylo Halytskyi Lviv National Medical University for the 4<sup>th</sup>-year students of Medical Faculty by the Specialty 222 "Medicine".

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**Changes and additions to the study program of the discipline during 2023-2024 academic year.**

No	Content of changes (additions)	Minutes of the meeting of the Department, date	Notes
I.	No OC changed from 29 to 25.2	No 13, 27 april 2023	

Chair of the Department of Endocrinology  
Doctor of Medical Sciences, prof. Urbanovych A.M.



Signature

## INTRODUCTION

The program of studying the discipline "Endocrinology" is compiled in accordance with the educational and professional program (EPP) of training of specialists of the second (master's) level of higher education

Field of Knowledge 22 "Healthcare"

specialties 222 "Medicine"

### Description of the discipline (abstract)

According to the curriculum, discipline "Endocrinology" is studied on the 4<sup>th</sup> year. The organization of the educational process is carried out under the European credit-transfer system of organization of the educational process (ECTS). In the 4<sup>th</sup> year the duration of practical classes is 4.0 hours. The main goal is to study the basics of endocrinology. The emphasis is on acquiring the skills of interviewing the patients and performing clinical examination, diagnosis, differential diagnosis, treatment and prevention of diseases of the endocrine organs, diagnosis and provision of emergency medical care in emergency conditions, as well as medical manipulation. Students participate in the diagnostic and therapeutic process of patients under the guidance of teachers of the department. Also provides for mastering/familiarization with the procedures most commonly used in the practice of endocrinology. Practical classes, clinical trips with assistants, associate professors and professors of the department are the main part of this course. Each student records and reports clinical data on the examined patients to his/her supervisor on a daily basis and writes the history of the disease.

Types of training according to the curriculum are: a) lectures, b) practical classes, c) independent studying of the students.

Topic plans of lectures, practical classes and personal work reveal problematic issues of endocrinology. Didactic tools (multimedia presentations, slides, educational videos, demonstration of thematic patients) are used in the lecture course. The lecture and practical stages of students' studies consist, mainly, so that the lectures are preceded by appropriate practical activities.

Practical classes are conducted on the clinical bases of the department. The methodology of organizing practical endocrinology training involves the following:

- making the student a participant in the process of providing medical care to patients from the moment of their hospitalization, examination, diagnosis, treatment to discharging from the hospital;
- mastering professional practical skills; skills in the team of students, doctors, other participants in the process of providing medical care;
- creating understanding of the responsibility for the students' level of training, its improvement during training and professional activity.

In order to implement the specified in the first lesson of the appropriate module, it is necessary to provide the students with a detailed studying plan in the clinic and provide conditions for its implementation. This plan should include:

- research the students must familiarize themselves with (or to get acquainted with);
- algorithms (protocols) of examinations, diagnosis, treatment, prevention in accordance with the standards of evidence-based medicine;
- management of patients, which should be carried out by the student during the study of the discipline;
- reports of the patient's disease history in the training group, clinical rounds, practical conferences.

Treatment of the patient involves:

- 1) finding out the patient's complaints, history of the disease and life, interviewing the patient on each organs and body system;
- 2) physical examination of the patient and determination of the main symptoms/syndromes of the disease;
- 3) analysis of the results of laboratory and instrumental examination;
- 4) diagnosis;
- 5) prescription of treatment;
- 6) determination of primary and secondary prevention measures;
- 7) report of the patient's examination results by a team of students in a training group, analysis of the correctness of diagnosis under the guidance of the teacher, differential diagnosis, prescribed examination, therapeutic tactics, assessment of prognosis and performance, prevention.

It is recommended to include into practical classes:

- 1) control of the initial level of knowledge with the help of test questions with 5 answer options of which 1 is correct and checking workbooks;
- 2) treatment of 1-2 patients with diseases and conditions corresponding to the topic of the lesson, followed by discussion of the correctness of diagnosis, differential diagnosis and therapeutic measures using the principles of evidence-based medicine and in accordance with National and European guidelines and protocols;
- 3) taking into account results of additional research methods (laboratory and instrumental), which are used in the diagnosis and differential diagnosis, the consideration of which is provided by the topic of practical training;
- 4) control of the final level of knowledge on test tasks in the same way as in 1)

In practical classes, students are advised to keep protocols in which it is necessary to enter brief information about patients examined during a practical lesson, diagnosis, examination plan and prescribed treatment.

Independent studying and personal work of students makes up 50% of the curriculum, it is an integral part of educational activity and is included in the credits of ECTS of each module and discipline as a whole. It includes:

- preparation for practical classes;
- execution and protection of ISR;
- preparation and writing of the history of the disease;
- mastering practical skills;
- preparation for final control;
- writing a workbook on the topic of the lesson.

Teachers of the department provide the opportunity for independent work. During practical classes and final control, control and evaluation of its implementation are carried out.

Departments of endocrinology have the right to make changes to the curriculum within 15%.

Internalizing of the topic (current control) is controlled at a practical lesson, mastering the discipline (final control) - differentiated score. It is recommended to use the following means of assessing the level of preparation of students: test tasks, solving situational problems, conducting laboratory tests and assessing their results, analysis and evaluation of the results of instrumental studies and parameters that characterize the functions of the human body, control the mastering of practical skills and medical techniques.

Final control is carried out in accordance with the schedule agreed with the department and approved by the dean. The assessment of the student's achievement in the discipline is rated on a multi-scale system.

For those students who want to improve their score upon completion of the study of the discipline, the curriculum provides an opportunity to do so.

Structure of the discipline	Number of credits, hours			Year of study, semester	Type of control	
	Total	Classroom				Personal work
		lectures	practical classes			
<b>Discipline: Endocrinology</b>	<b>2credits/ 60hours</b>	<b>6</b>	<b>24</b>	<b>30</b>	<b>Course 4 (7 or 8 semester)</b>	<b>Differentiated credit</b>

**The subject of study** is the prevention, diagnosis and treatment of endocrine diseases.

**Interdisciplinary connections** based on the study by students of human anatomy, medical biology, histology, cytology and embryology, pathomorphology, physiology, pathophysiology, medical and biological physics, bioorganic and biological chemistry, microbiology, virology and immunology, pharmacology, clinical pharmacology and clinical pharmacy, radiology and radiation medicine, propaedeutics of internal medicine.

### 1. The purpose and tasks of the educational discipline:

1.1. The purpose of teaching the educational discipline "Endocrinology" is to form the ability to apply the acquired knowledge, skills, skills and understanding to solve typical tasks of a doctor in the field of health, the scope of which is provided by the defined lists of syndromes and symptoms of diseases, urgent conditions and diseases requiring special tactics of patient management; laboratory and instrumental research, medical treatment.

1.2. The main objectives of studying the discipline "Endocrinology" are:

- interviewing and clinical examination of patients with major diseases of the endocrine system and analyze their results;
- determining the etiological and pathogenetic factors of the most common diseases of the endocrine system;
- analyzing a typical clinical picture, identify clinical options and complications of the most common diseases of the endocrine system;
- establishing a preliminary diagnosis of the most common endocrine system;
- prescribing laboratory and instrumental examination of patients with the most common diseases of the endocrine system and their complications;
- based on laboratory and instrumental examination results, carrying out differential diagnosis, making and supporting clinical diagnosis of the most common diseases of the endocrine system;
- determining a necessary schedule of work and rest in the treatment of the most common diseases of the endocrine system;
- determining necessary medical nutrition in the treatment of the most common diseases of the endocrine system;
- determining the principles and nature of treatment in the treatment of the most common diseases of the endocrine system;
- prescribing treatment, including prognosis-modifying, the most common diseases of the endocrine system and their complications;
- determining the tactics of emergency medical care on the basis of an emergency diagnosis;
- providing emergency medical care on the basis of an emergency diagnosis;
- carrying out primary and secondary prevention of the most common diseases of the endocrine system;

- to evaluating the prognosis and performance of patients with the most common diseases of the endocrine system;
- performing medical manipulations;
- maintaining medical documentation;
- complying with the requirements of ethics, bioethics and deontology in their professional activities.

1.3. **Professional skills and results of education**, developing of which the discipline contributes to (interrelation with the normative content of training of higher education applicants, formulated in terms of study results in EP).

According to the requirements of the EP, the discipline ensures the acquisition of students

Professional skills:

- *integral*:

the ability to solve typical and complex specialized problems and practical problems in the field of health care, or in the process of training, which involves the conduct of research and/or implementation of innovations and is characterized by the complexity and uncertainty of conditions and requirements.

- *general*:

GC1. Be capable of abstract thinking, analysis and synthesis.

GC2. The ability to learn and master modern knowledge.

GC3. Ability to apply knowledge in practical situations.

GC4. Knowledge and understanding of the subject area and understanding of professional activities.

GC5. Ability to adapt and act in a new situation.

GC6. Ability to make informed decisions.

GC7. Ability to work in a team.

GC8. Ability to interpersonal interaction.

GC10. Ability to use information and communication technologies.

GC11. Ability to search, process and analyze information from different sources.

GC12. Determination and perseverance in relation to tasks and responsibilities.

GC13. Awareness of equal opportunities and gender issues.

GC14. Ability to realize their rights and responsibilities as a member of society, to realize the values of a civil (free democratic) society and the need for its sustainable development, rule of law, rights and freedoms of a citizen in Ukraine.

GC15. The ability to preserve and multiply moral, cultural, scientific values and achievements of society on the basis of understanding the history and patterns of the development of the subject area, its place in the general system of knowledge about nature and society and the development of society, technology and technology, to use different types and forms of motor activity for active recreation and a healthy lifestyle.

- *special (professional, subject)*:

1. Ability to collect medical information about the patient and analyze clinical data.

2. Ability to determine the required list of laboratory and instrumental studies and evaluate their results.

3. Ability to establish a preliminary and clinical diagnosis of the disease.

4. Ability to determine the necessary mode of work and rest in the treatment and prevention of diseases.

5. Ability to determine the nature of nutrition in the treatment and prevention of diseases.

6. Ability to determine the principles and nature of treatment and prevention of diseases.

7. Ability to diagnose emergency conditions.

8. Ability to determine tactics and provide emergency medical care.

9. Ability to conduct medical and evacuation measures.

10. Ability to perform medical manipulations.

11. Ability to solve medical problems in new or unfamiliar environments in the presence of incomplete or limited information taking into account aspects of social and ethical responsibility.

16. Ability to maintain medical documentation, including electronic forms.

20. Ability to communicate their own knowledge, conclusions and arguments on health problems and related issues to specialists and non-practitioners, in particular to persons who are studying in a clear and unambiguous way.

24. Compliance with ethical principles when working with patients, laboratory animals.

25. Observance of professional and academic integrity, be responsible for the accuracy of the obtained scientific results.

#### **Matrix of professional skills**

<b>№</b>	<b>Classification of professional skills by NFQ</b>	<b>Knowledge</b>	<b>Ability</b>	<b>Communication</b>	<b>Autonomy and responsibility</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Integral competence</b>					
The ability to solve typical and complex specialized problems and practical problems in a healthcare professional					

activity, or in a learning process that involves research and/or innovation and is characterized by the complexity and uncertainty of conditions and requirements.

**General competence**

1.	Capability of abstract thinking, analysis and synthesis.	Be aware of the ways to analyze, synthesize and expand their knowledge	Be able to analyze information, make informed decisions, be able to acquire new knowledge.	Establish appropriate connections to achieve goals.	To be responsible for timely acquisition of knowledge.
2.	The ability to learn and master modern knowledge.	Know the current trends in the development of the industry and analyze them.	To be able to analyze professional information, to make informed decisions, to acquire modern knowledge.	Establish appropriate connections to achieve goals.	To be responsible for the timely acquisition of modern knowledge.
3.	Ability to apply knowledge in practical situations.	Have specialized conceptual knowledge acquired in the learning process.	Be able to solve complex problems and problems that appear in professional activity.	Clear and unambiguous delivery of their own conclusions, knowledge and explanations to specialists and non-specialists.	Responsible for decision-making in difficult conditions.
4.	Knowledge and understanding of the subject area and understanding of professional activities.	Have deep knowledge of the structure of professional activity.	Be able to carry out professional activities that require updating and integrating knowledge.	Ability to effectively build communication strategy in professional activity.	Be responsible for professional development, the ability to further professional training with a high level of autonomy.
5.	Ability to adapt and act in a new situation.	Know the types and ways of adaptation, the principles of action in a new situation.	To be able to apply means of self-regulation, to be able to adapt to new situations (circumstances) of life and activity.	Establish appropriate links to achieve the result.	Be responsible for the timely use of self-regulation methods.
6.	Ability to make reasonable decisions.	Know the tactics and strategies of communication, laws and ways of communicative behavior.	Be able to make a reasonable decision, choose ways and strategies to ensure effective teamwork.	Use communication strategies and interpersonal interaction skills.	Be responsible for the choice and tactics of the way of communication.
7.	Ability to work in a team.	Know the tactics and strategies of communication, principles and ways of communicative behavior.	Be able to choose ways and strategies of communication to ensure effective teamwork.	Use communication strategies	Be responsible for the choice and tactics of the way of communication.
8.	Ability of interpersonal interaction.	Know the principles and ways of interpersonal interaction.	To be able to choose ways and strategies of communication for interpersonal interaction.	Use interpersonal interaction skills.	Be responsible for the choice and tactics of the way of communication.
10.	Ability to use information and communication technologies	Have deep knowledge in the field of information and communication technologies used	Be able to use information and communication technologies in the professional field,	Use information and communication technologies in professional activities.	To be responsible for the development of professional knowledge and

		in professional activities.	which requires updating and integrating of knowledge.		skills.
11.	Ability to search, process and analyze information from different sources.	Have knowledge of searching, processing and analyzing information from different sources.	Be able to find, process and analyze information from different sources.	Be able to share the found information	Responsible for the quality of the tasks.
12.	Determination and perseverance in relation to tasks and responsibilities.	Know how to perform the tasks and responsibilities taken.	To be able to perform the tasks and the duties taken.	Ability to collectively perform tasks and responsibilities.	Responsible for the performance of tasks and responsibilities.
13.	Awareness of equal opportunities and gender issues.	Know gender problems.	To be able to solve gender problems.	Make suggestions to relevant bodies and institutions on equal opportunities and gender issues.	To be responsible for the implementation of measures to resolve gender problems.
14.	Ability to realize their rights and responsibilities as a member of society, to realize the values of a civil (free democratic) society and the need for its sustainable development, rule of law, rights and freedoms of a citizen in Ukraine.	Know your rights and responsibilities as a member of society, realize the values of a civil (free democratic) society and the need for its sustainable development, rule of law, rights and freedoms of a citizen in Ukraine.	To be able to realize their rights and responsibilities as a member of society, to realize the values of a civil (free democratic) society and the need for its sustainable development, rule of law, rights and freedoms of a citizen in Ukraine.	To be able to communicate with other members of society without violating their rights and obligations.	Responsibly realize their rights and responsibilities as a member of society, realize the values of a civil (free democratic) society and the need for its sustainable development, the rule of law, rights and freedoms of a citizen in Ukraine.
15.	Ability to preserve and multiply moral, cultural, scientific values and achievements of society on the basis of understanding the history and patterns of the development of the subject area, its place in the general system of knowledge about nature and society and the development of society, technology and technology, to use different types and forms of motor activity for	Know how to preserve and multiply moral, cultural, scientific values and achievements of society on the basis of understanding the history and patterns of the development of the subject area, its place in the general system of knowledge about nature and society and the development of society and technology, use different types and forms of motor activity for active recreation and a healthy lifestyle.	To be able to preserve and multiply moral, cultural, scientific values and achievements of society on the basis of understanding the history and patterns of the development of the subject area, its place in the general system of knowledge about nature and society and the development of society, technology and technology, to use different types and forms of motor activity for active recreation and a healthy lifestyle.	Exchange moral, cultural, scientific values and achievements of society on the basis of understanding the history and patterns of the development of the subject area, its place in the general system of knowledge about nature and society and the development of society, technology and technology, use different types and forms of motor activity for active recreation and a healthy lifestyle.	Responsibly treat the storage and multiplication of moral, cultural, scientific values and achievements of society on the basis of understanding the history and regularities of the development of the subject area, its place in the general system of knowledge about nature and society and the development of society and technology, use different types and forms of motor activity for active recreation

	active recreation and healthy lifestyle.				and a healthy lifestyle.
<b>Special (professional, subject) competences</b>					
1.	Ability to collect medical information about the patient and analyze clinical data.	Have specialized knowledge about the human body, its organs and systems, know the methods and standard procedures of making inquiries and conducting a physical examination of the patient.	Be able to conduct a conversation with the patient on the basis of algorithms and standards, using standard techniques to conduct a physical examination of the patient. Be able to assess the state of human health.	Effectively form a communication strategy when communicating with the patient. Enter information about the state of human health to the relevant medical documentation.	Be responsible for the qualitative collection of information received on the basis of the inquiries, inspection, palpation, percussion of organs and systems and for timely assessment of the state: human health and for taking appropriate measures.
2.	Ability to determine the required list of laboratory and instrumental studies and evaluate their results	Have specialized knowledge about the human body, its organs and systems, standard methods of laboratory and instrumental studies (according to list 4).	Be able to analyze the results of laboratory and instrumental studies evaluate information on the diagnosis of the patient and on their basis (according to list 4).	To arrive to conclusions about the necessary list of laboratory and instrumental tests and convey them to the patient and specialists (according to list 4).	Be responsible for decision-making regarding evaluation of laboratory and instrumental research results
3.	Ability to establish a preliminary and clinical diagnosis of the disease.	Have specialized knowledge about the human organs and its systems; standard methods of examination; algorithms for diagnosing diseases; algorithms for isolating leading symptoms or syndromes (according to list 1); preliminary and clinical diagnoses (according to list 2); methods of laboratory and instrumental examination (according to list 3); knowledge on the assessment of a person's condition.	To be able to conduct a physical examination of the patient; to be able to make a reasonable decision on the selection of a leading clinical symptom or syndrome; be able to make a preliminary and clinical diagnosis of the disease (according to list 2); prescribe laboratory and instrumental examination of the patient (according to list 3) by using standard techniques.	Maintain medical documentation of the patient (outpatient/inpatient patient card, etc.) on the basis of regulatory documents	Adhering to ethical and legal norms, be responsible for making reasonable decisions and actions regarding the correctness of the established preliminary and clinical diagnosis of the disease.
4.	Ability to determine the necessary mode of work and rest in the treatment of diseases.	Have specialized knowledge about the human body, its organs and systems; ethical and legal norms; algorithms and standard for	To be able to determine, on the basis of preliminary and clinical diagnosis, by making a reasonable decision,	To form and convey to the patient and specialists conclusions about the necessary regime of work and rest in the treatment of the	Be responsible for the validity of the appointment of the regime of work and rest in the treatment of the disease



		determining the mode of work and rest in treatment, on the basis of preliminary and clinical diagnosis of the disease (according to list 2).	the appropriate regime of work and rest in the treatment of the disease (according to the list 2).	disease (according to the list 2).	(according to the list 2).
5.	Ability to determine the nature of nutrition in the treatment of diseases.	Have specialized knowledge about the human body and its organs and systems; algorithms and standard schemes for the purpose of nutrition in the treatment of diseases (according to the list 2).	Be able to determine, on the basis of preliminary and clinical diagnosis, the nature of nutrition in the treatment of diseases (according to the list 2).	To arrive at and convey conclusions about nutrition in the treatment of the disease to the patient, specialists (according to the list 2).	Be responsible for the validity of determining nutrition in the treatment of the disease (list 2).
6.	Ability to determine the principles and nature of treatment of diseases.	Have specialized knowledge of algorithms and standard treatment schemes for diseases (according to list 2).	Be able to determine the principles and nature of treatment of the disease (according to list 2).	To form and convey to the patient and specialists their own conclusions on the principles and nature of treatment (according to the list 2).	Be responsible for making decisions on the principles and ways of treatment of the disease (list 2).
7.	Ability to diagnose emergency conditions.	Have specialized knowledge about the human body and its organs and systems; standard methods of examination of a person (at home, on the street, in a healthcare institution) in the face of lack of information.	Be able, in conditions of lack of information, using standard methods, by making a reasonable decision to assess the state of a person and diagnose (according to list 3).	In all circumstances, make a reasonable decision on the assessment of the human condition, diagnosis and organization of the necessary medical measures, depending on the state of the person following the relevant ethical and legal norms,; fill in the relevant medical documents.	Be responsible for the timeliness and effectiveness of medical measures to diagnose emergency conditions.
8.	Ability to determine the tactics of emergency medical care.	Know the legislative framework for the provision of emergency medical care, in particular, the Law of Ukraine "On Emergency Medical Care." Have specialized knowledge of human emergency; principles of emergency medical care.	Be able to determine emergency conditions (according to list 3); principles and tactics of emergency medical care; to conduct organizational and diagnostic measures aimed at saving lives.	Formulate and convey to the patient or his legal representative the need for emergency care reasonably and obtain consent for medical intervention.	Be responsible for the correctness of determining the emergency state, the degree of its severity and the tactics of emergency medical care.
9.	Skills of medical evacuation measures	Have specialized knowledge about the structure of the human body, its organs and systems; algorithms for	To be able to conduct medical and evacuation measures	Be able to work in a team during medical and evacuation activities	To be responsible for timely medical and evacuation measures

		emergency medical care in case of emergency (according to list 3).			
10.	Skills of medical procedures.	Have specialized knowledge about the structure of the human body, its organs and systems; knowledge of algorithms for performing medical procedures(according to list 5).	Be able to perform medical procedures(according to list 5).	It is reasonable to form and bring to the patient, specialists conclusions about the need for medical procedures (according to the list 5)	Be responsible for the quality of medical procedures(according to list 5).
11.	Ability to solve medical problems in new or unfamiliar environments in the presence of incomplete or limited information taking into account aspects of social and ethical responsibility.	Know how to solve medical problems in new or unfamiliar environments with incomplete or limited information taking into account aspects of social and ethical responsibility	Be able to solve medical problems in new or unfamiliar environments with incomplete or limited information taking into account aspects of social and ethical responsibility	Use communication skills when solving medical problems in new or unfamiliar environments in the presence of incomplete or limited information taking into account aspects of social and ethical responsibility	To be responsible for a timely and up to par solution of medical problems in new or unfamiliar environments in the presence of incomplete or limited information taking into account aspects of social and ethical responsibility
16.	Ability to handle medical documentation, including electronic forms.	Know the system of official document management in the professional work of a doctor, including modern computer information technologies.	Be able to determine the source and location of the necessary information depending on its type.	Receive the necessary information from a certain source and, on the basis of its analysis, form appropriate conclusions.	Be responsible for the completeness and quality of the analysis of information and conclusions on the basis of its analysis.
21.	To communicate their own knowledge , conclusions and arguments on health problems and related issues clear and unambiguously to specialists and non-practitioners, in particular to persons who are studying.	Have knowledge of healthcare issues and issues related to specialists and non-practitioners, in particular to persons who are studying.	To be able to clearly and ambiguously communicate their own knowledge, conclusions and reasoning on health problems and issues related to specialists and non-practitioners, in particular to persons who are studying.	To be able to communicate their own knowledge, conclusions and arguments on health problems and issues related to specialists and non-practitioners, in particular to persons who are studying in a clear and unambiguous way.	Responsibly, clearly and unambiguously communicate their own knowledge, conclusions and reasoning on health problems and issues related to specialists and non-practitioners, in particular to persons who are studying.
24.	Compliance with ethical principles when working with patients, laboratory animals.	Know the ethical principles when working with patients, laboratory animals.	Be able to adhere to ethical principles when working with patients, laboratory animals.	Be able to adhere to ethical principles when working with patients, laboratory animals.	Responsibly adhere to ethical principles when working with patients, laboratory animals.

25.	Maintain professional and academic integrity, be responsible for the accuracy of the obtained scientific results.	Know the rules of professional and academic integrity, responsibility for the accuracy of the obtained scientific results.	Be able to maintain professional and academic integrity, responsibility for the accuracy of the obtained scientific results.	Be able to maintain professional and academic integrity, responsibility for the reliability of the obtained scientific results when working in a team.	Be responsible for the maintaining of professional and academic integrity, responsibility for the accuracy of the obtained scientific results.
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Training results:

Integrative final program results, the formation of which contributes to the educational discipline:

- carry out professional activities in social interaction based on humanistic and ethical principles; identify future professional activities as socially important for human health;
- apply knowledge of general and professional disciplines in professional activities;
- adhere to the standards of sanitary and hygienic regime and safety requirements in the implementation of professional activities;
- use the results of independent search, analysis and synthesis of information from different sources to solve typical tasks of professional activity;
- to support information used for making decisions, to be responsible for them in standard and non-standard professional situations; adhere to the principles of deontology and ethics in professional activity;
- carry out professional communication in modern Ukrainian, use the skills of oral communication in a foreign language, analyze the texts of professional direction and translate foreign information sources;
- adhere to the standards of communication in professional interaction with colleagues, management, effective teamwork;
- analyze information obtained as a result of scientific research, generalize, systematize and use it in professional activities.

Program results of training for the discipline:

- PRT 1. Have thorough knowledge of the structure of professional activity. Be able to carry out professional activities that require updating and integrating knowledge. Be responsible for professional development, the ability to further professional training with a high level of autonomy.
- PRT 2. Understanding and knowledge of fundamental and clinical biomedical sciences, at a level sufficient for solving professional health problems.
- PRT 3. Specialized conceptual knowledge, including scientific achievements in the field of health care and is the basis for research, critical understanding of problems in the field of medicine and interdisciplinary problems.
- PRT 4. Identify leading clinical symptoms and syndromes (list 1); according to standard methods, using preliminary data of the patient's history, patient's examination data, knowledge about the person, his organs and systems, to establish a preliminary clinical diagnosis of the disease (according to the list 2).
- PRT 5. Collect complaints, history of life and disease, evaluate the psychomotor and physical development of the patient, the state of organs and systems of the body, on the basis of the results of laboratory and instrumental studies to evaluate information on the diagnosis (according to the list 4), taking into account the age of the patient.
- PRT 6. To establish the final clinical diagnosis by making a reasonable decision and analyzing the received subjective and objective clinical data, additional examination, differential diagnostics, adhering to appropriate ethical and legal norms, under the supervision of a supervisor at a healthcare institution (according to list 2).
- PRT 7. Assign and analyze additional (mandatory and optional) methods of examination (laboratory, functional and/or instrumental) (according to list 4), patients with diseases of organs and systems of the body for differential diagnosis of diseases (according to list 2).
- PRT 8. Determine the main clinical syndrome or what causes the severity of the condition of the patient (according to the list of 3) by making a reasonable decision and assessing the state of the person in any circumstances (in the conditions of the health institution, beyond its borders), including in conditions of emergency and hostilities, in the field, in conditions of lack of information and limited time.
- PRT 9. Determine the nature and principles of treatment of patients (conservative, surgical) with diseases (according to the list 2), taking into account the age of the patient, in a health institution, outside and at the stages of medical evacuation, including in the field, on the basis of a preliminary clinical diagnosis, adhering to the relevant ethical and legal norms, by making a reasonable decision on existing algorithms and standard schemes, if it is necessary to expand the standard scheme to be able to justify personalized recommendations under the supervision of a supervisor in a medical institution.

- PRT 10. Determine the necessary approach to work, rest and nutrition on the basis of the final clinical diagnosis, adhering to appropriate ethical and legal norms, by making a reasonable decision on existing algorithms and standard schemes.
- PRT 14. To determine the tactics and provide emergency medical care in case of emergency (according to list 3) in conditions of limited time in accordance with existing clinical protocols and standards of treatment.
- PRT 15. To organize the provision of medical care and medical and evacuation measures to the population and servicemen in conditions of emergency and combat operations, including in the field conditions.
- PRT 17. Perform medical manipulations (according to the list of 5) in the conditions of a medical institution, at home or at work on the basis of a preliminary clinical diagnosis and/or indicators of the patient's condition by making a reasonable decision, observing appropriate ethical and legal norms.
- PRT 19. Plan and implement a system of anti-epidemic and preventive measures for the occurrence and spread of diseases among the population.
- PRT 21. Find the necessary information in professional literature and databases of other sources, analyze, evaluate and apply this information.
- PRT 22. Apply modern digital technologies, specialized software, statistical data analysis methods to solve complex health problems.
- PRT 23. Assess the environmental impact on human health to assess the morbidity of the population.
- PRT 24. To organize the necessary level of individual security (own and persons who are cared for) in case of typical dangerous situations in an individual field of activity.
- PRT 25. To communicate their own knowledge, conclusions and arguments on health problems and related issues to specialists and non-practitioners in a clear and unambiguous way.
- PRT 27. Communicate fluently in Ukrainian and English, in both speaking and writing to discuss professional activities, research and projects.
- PRT 28. Make effective decisions about health care problems, evaluate the necessary resources, take into account social, economic and implications of ethical.
- PRT 29. Plan, to organize and conduct events for the specific prevention of infectious diseases, including in accordance with the National calendar of preventive vaccinations, both mandatory and recommended. Manage vaccine residues, organize additional vaccination campaigns, including immunoprophylaxis measures.

During the training, students must conduct the treatment of patients with the following diseases and conditions:

Diabetes mellitus
Hypothyroidism
Thyrotoxicosis
Chronic adrenal insufficiency

The organization of the educational process should ensure participation of students in the management of at least 2/3 of inpatients. If it is not possible to provide the curation of patients with diseases on the topic of the lesson, students fill in the educational history of the disease with diseases of the relevant topic. The need to write such a story is determined by the assistant/associate professor (responsible for teaching and methodological work) on the basis of a weekly review of data on the presence of relevant patients in the departments.

Daily protocols of examination of patients by students are provided to the associate professor/assistant professor for control. Associate professors/assistants ensure that each student receives the necessary level of competence in the following areas: patient questioning, clinical examination, oral report, diagnostic decision-making and determination of therapeutic tactics (critical thinking), filling in documentation.

## 2. Information scope of educational discipline

**Discipline "Endocrinology": 2 credits of ECTS, 60 hours (lectures - 6 hours, practical classes - 24 hours, IW - 30 hours)**

### Specific goals

#### Students should be able to:

- Use the basic methods of examination of patients with endocrinological pathology, evaluate their results.
- Diagnose, treat, organize the introduction of measures to prevent diabetes, iodine deficiency diseases of the thyroid gland, thyrotoxicosis, hypothyroidism, thyroiditis, diseases of the hypothalamic-pituitary system (Cushing's disease, acromegaly, diabetes deficiency), chronic adrenal insufficiency, corticosterone analyze and interpret the results of tests for these diseases.
- Recognize congenital hypothyroidism, congenital adrenal dysfunction, growth disorders and sexual development.
- Diagnose and provide emergency care at pre-hospital and hospital stages in diabetic (hyperketonemic) and hypoglycemic comas.
- Recognize less common endocrine diseases: hyperprolactinemia, hypopituitarism, somatotropic insufficiency, thyroid tumors, hypoparathyroidism and hyperparathyroidism, hormonal tumors of the adrenal and sexual glands, menopausal neurosis.

- Recognize endocrinological aspects of syndromes: arterial hypertension and arterial hypotension, edema syndrome, urinary and nephrotic syndrome, anemia, limb pain, partial or complete vision loss, headache, convulsive syndrome;
- Evaluate blood glucose, ketonuria, ultrasound and radionuclide examination of the thyroid gland.

### **Topic 1. Diabetes Mellitus: classification, etiology, pathogenesis.**

Determination of diabetes. Epidemiology of diabetes in Ukraine and the world, prognosis of its morbidity, prevalence of diabetes in different age groups. Etiology and pathogenesis of diabetes. Type 1 diabetes mellitus: the role of viral infection and autoimmune processes, genetic predisposition. Type 2 diabetes mellitus: the role of genetic predisposition, obesity, external factors. Insulin resistance and insulin secretion disorders. Classification of glycemia disorders (WHO, 1999), clinical types of diabetes.

### **Topic 2. Diabetes Mellitus: clinic, diagnosis.**

Characteristics of internal organs lesions in diabetes mellitus: cardiovascular system, hepatobiliary system, urinary organs, diabetic osteoarthropathy. Diagnosis of diabetes. Criteria for diagnosis of diabetes and other categories of hyperglycemia (WHO, 1999). Indications and rules of the glucosotolerant test. Diagnostic value of determination of glycated hemoglobin, fructosamine, C-peptide, glucosuria, ketonuria.

### **Topic 3. Diabetes mellitus type 1, modern methods of therapy.**

General principles of diabetes therapy. Criteria for compensation of carbohydrate metabolism in patients with type 1 DM. Insulin therapy. Characteristics of the main drugs of insulin including domestic production. Indications for their use. Classification of insulin preparations of ultrashort, short, intermediate and long-term action, analogues of insulin. Calculation of the daily dose of insulin. Correction of insulin dose using bread units. Insulin therapy: traditional, intensified and pump insulin therapy. Cell therapy. Complications of insulin therapy: hypoglycemic conditions, insulin allergy, post-injection lipodystrophy, insulin resistance, chronic insulin overdose (Somogyi syndrome), insulin edema. Sanatorium treatment. Protocols for helping patients with type 1 diabetes mellitus.

### **Topic 4. Diabetes mellitus type 2, modern methods of therapy.**

Algorithm of treatment of type 2 diabetes mellitus. The main methods of treatment of type 2 diabetes mellitus: rational nutrition, dosed physical activity, drug therapy, self-control training of the patient. Rational nutrition: physiology, caloric value, restriction from refined carbohydrates, consumption of dietary fibers, trace elements, vitamins. Dosed physical activity and rules of its purpose. Drug therapy: insulin sensitizers (metformin, thiazolidindions), insulin secretagogues (sulfonyl derivatives, glinides), incretine-series preparations (analogues of glucagon-like peptide 1 (GLP-1), dipeptidase inhibitors (DPP-1)). Protocols for providing medical care to patients with type 2 diabetes mellitus. The peculiarities of the course of acute respiratory disease COVID-19 caused by the coronavirus SARS-CoV-2 in patients with diabetes.

### **Topic 5. Acute and chronic complications of diabetes.**

Ketoacidotic conditions with diabetic (hyperketonemic) coma. Etiology, pathogenesis, clinic, diagnosis, differential diagnosis, treatment. Hyperosmolar (non-acetotic) diabetic coma. Lactic-acidosis coma. Hypoglycemic coma, hypoglycemic states. Etiology, pathogenesis, clinic, diagnosis, treatment.

Chronic complications of diabetes. Microvascular complications (diabetic retinopathy, nephropathy, neuropathy); macro-vascular lesions (coronary heart disease, cerebral circulation disorders, diabetic foot). Classification, diagnosis and treatment.

### **Topic 6. Features of the course and treatment of diabetes in surgical patients, during pregnancy.**

Principles of treatment of pregnant women with diabetes. Features of urgent and planned surgical interventions in patients with diabetes.

### **Topic 7. Iodine deficiency diseases of the thyroid gland. Signs of an endemic area according to WHO. Clinic, diagnosis, prevention and treatment. Hypothyroidism and thyroiditis. Classification, diagnosis, clinic, treatment.**

Definition of the concept of "iodine deficiency states." Manifestations of iodine deficiency. Determination of iodine deficiency areas by the prevalence of goiter in different age groups and iodine data. Determination of the size of the thyroid gland. The concept of simple non-toxic and nodular forms of the goiter. Influence of exogenous environmental factors and technogenic disasters at atomic energy facilities on the state of the thyroid gland and prevalence of its pathology. Iodine prevention: mass, group, individual. The value of the use of iodized salt in the prevention of iodine deficiency diseases. Limitations for the use of potassium iodide-based drugs.

Hypothyroidism, etiology, pathogenesis, clinic, diagnosis. Primary hypothyroidism, central, peripheral, subclinical, transient. Timely diagnosis of congenital hypothyroidism. Age features of hypothyroidism. Hypothyroidism against the background of autoimmune polyendocrinopathies. Subclinical Hypothyroidism. Treatment of hypothyroidism. Pregnancy and Hypothyroidism. Medical and social examination of patients with hypothyroidism. Thyroiditis. Clinic, diagnosis and treatment.

### **Topic 8. Thyrotoxicosis. Clinical forms. Diagnosis, treatment. Thyroid cancer. Classification, clinic, diagnosis, treatment. Diseases of the parathyroid glands.**

Diseases accompanied by thyrotoxicosis. Etiology, pathogenesis, clinical manifestations of diffuse toxic goiter, thyrotoxic and endocrine ophthalmopathy. Age peculiarities of the course of toxic goiter in children and the elderly. Clinical differences of nodular toxic goiter. Providing evidence supporting the diagnosis of

thyrotoxicosis. Drug, surgical treatment of toxic goiter, use of 131-iodine for therapeutic purposes. Complications of treatment of goiter. Medical and social examination of patients with toxic goiter. Nodular forms of goiter. Monitoring with nodes in the thyroid gland. Pathomorphological classification of thyroid tumors. Substantiation of the diagnosis of thyroid cancer. The role of the Chernobyl accident in the development of thyroid cancer. Modern treatment, rehabilitation and dispensary monitoring of patients with thyroid cancer. Anatomical and physiological data. Diseases of the thyroid glands. Hyperparathyroidism. Etiology. Pathogenesis. Classification. Clinic, clinical forms of hyperparathyroidism. Diagnosis. Differential diagnosis. Treatment. Indications for surgical treatment. Postoperative period and rehabilitation of patients. Drug therapy. Hypoparathyroidism. Etiology. Pathogenesis. Classification. Clinic. Diagnosis. Differential diagnosis. Prognosis. Prevention. Treatment. Clinical forms. The peculiarities of the course of acute respiratory disease COVID-19 caused by the coronavirus SARS-CoV-2 in patients with thyroid pathology.

**Topic 9. Diseases of the adrenal glands. Chronic and acute adrenal cortex failure. Etiology, pathogenesis, clinic, diagnosis, prevention and treatment.**

Hormones of the cortex and cerebral adrenal glands. Definition of the concept, prevalence of acute and chronic insufficiency of the adrenal cortex. Chronic adrenal insufficiency (Addison's disease). Etiology, pathogenesis, clinic, diagnosis, prevention and treatment. Acute adrenal insufficiency. Etiology, pathogenesis, clinic, diagnosis, prevention and treatment.

**Topic 10. Hormonal-active tumors of the adrenal glands.**

Classification of adrenal tumors. Cushing's syndrome (corticosteroma, glucosteroma) and Cushing disease. Clinic, diagnosis and differential diagnosis, treatment. Androsteroma, corticosteroma. Clinic, diagnosis and differential diagnosis, treatment. Primary hyperaldosteronism (Conn's syndrome). Clinic, diagnosis and differential diagnosis, treatment. Pheochromocytoma. Clinic, diagnosis and differential diagnosis, treatment. Determination of congenital adrenal hyperplasia. Clinical forms, diagnosis, treatment. The peculiarities of the course of acute respiratory disease COVID-19 caused by the coronavirus SARS-CoV-2 in patients with adrenal glands pathology.

**Topic 11. Diseases of the hypothalamic-pituitary system. Obesity. Diseases of the genital glands.**

Classification of hypothalamic-pituitary diseases. Acromegaly. Etiology and pathogenesis. Clinic. Diagnosis and differential diagnostics. Treatment. Cushing's disease. Etiology and pathogenesis. Classification. Clinic. Diagnosis and differential diagnostics. Treatment. Hyperprolactinemia syndrome. Classification. Etiology and pathogenesis. Clinic. Diagnosis, differential diagnosis. Treatment. Hypopituitarism. Etiology and pathogenesis. Clinic. Diagnosis and differential diagnosis. Treatment. Diabetes. Etiology and pathogenesis. Clinic. Diagnosis and differential diagnostics. Treatment. Somatotrophic insufficiency. Hypopituitarism. Classification. Etiology and pathogenesis. Clinic. Diagnosis, differential diagnosis. Treatment. Obesity. Etiology and pathogenesis. Classification. Clinic. Diagnosis. Treatment. Obesity in children and adolescents. Especially the course of acute respiratory disease COVID-19 caused by the coronavirus SARS-CoV-2.

**Topic 12. Diseases of the genital glands.**

Sex glands in men and women. Hormones. Congenital violations of sexual differentiation. Gonadal agenesis. Shereshevsky - Turner syndrome. Hermaphroditism syndrome. Cryptorchism. Mono- and anorchism syndrome. Klinefelter syndrome. Impaired sexual development in boys and girls. Menopause in women and men.

**3. Structure of the discipline "Endocrinology"**

Content modules and topics	Hours					
	Full-time studying					
	Total	Details				
Lec		Pract	Lab.	Idiv id. st.	Pers. w.	
1	2	3	4	5	6	7
Topic 1. Diabetes mellitus: classification, etiology, pathogenesis.		2	2			2
Topic 2. Diabetes mellitus: clinic, diagnosis			2			2
Topic 3. Diabetes mellitus type 1, modern methods of treatment.			2			2
Topic 4. Diabetes mellitus type 2, modern methods of treatment.			2			2
Topic 5. Acute and chronic complications of diabetes.			2			2
Topic 6. Features of the course and treatment of diabetes in surgical patients, during pregnancy.			2			2
Topic 7. Iodine deficiency diseases of		2	2			2

the thyroid gland. Signs of an endemic area according to WHO. Clinic, diagnosis, prevention and treatment. Hypothyroidism and thyroiditis. Classification, diagnosis, clinic, treatment.						
Topic 8. Hyperthyroidism. Clinical forms. Diagnosis, treatment. Thyroid cancer. Classification, clinic, diagnosis, treatment. Diseases of the parathyroid glands.			2			2
Topic 9. Diseases of the adrenal glands. Chronic and acute adrenal cortex failure. Etiology, pathogenesis, clinic, diagnosis, prevention and treatment.		2	2			2
Topic 10. Hormonal-active tumors of the adrenal glands.			2			2
Topic 11. Diseases of the hypothalamic-pituitary system. Obesity.			2			2
Topic 12. Diseases of the genital glands.			2			2
Preparation for the credit						6
Together with the content module hours/credits ECTS	60/2	6	24			30

Note. Classroom work - 50%, independent studying - 50%.

#### 4. Lecture topics

№	Topics	Hours
1.	Diabetes. Modern classification, etiology, pathogenesis, clinic, diagnosis. Chronic complications of diabetes. The latest methods of treatment of patients with DM. Oral sugar medications, modern insulin preparations and its analogues	2
2.	Diseases of the thyroid gland. Diagnosis, differential diagnosis, prevention and treatment of goiter	2
3.	Diseases of the adrenal glands. Chronic adrenal insufficiency. Hormonal-active tumors. Diseases of the hypothalamic-pituitary system. Clinic, diagnosis, treatment	2
	Total	6

#### 5. Topics of practical classes

№	Topics	Hours
1.	Diabetes, classification, etiology, pathogenesis, clinic, diagnosis.	2
2.	Diabetes mellitus: clinic, diagnosis.	2
3.	Diabetes mellitus type1, modern methods of therapy	2
4.	Diabetes mellitus type 2, modern methods of therapy.	2
5.	Acute and chronic complications of diabetes. Features of the course and treatment of diabetes in surgical patients, during pregnancy.	2
6.	Features of the course and treatment of diabetes in surgical patients, during pregnancy	2
7.	Iodine deficiency diseases of the thyroid gland. Signs of an endemic area according to WHO. Clinic, diagnosis, prevention and treatment. Hypothyroidism and thyroiditis. Classification, diagnosis, clinic, treatment.	2

8.	Thyrotoxicosis. Clinical forms. Diagnosis, treatment. Thyroid cancer. Classification, clinic, diagnosis, treatment. Diseases of the thyroid glands.	2
9.	Diseases of the adrenal glands. Chronic and acute adrenal cortex failure. Etiology, pathogenesis, clinic, diagnosis, prevention and treatment.	2
10.	Hormonal-active tumors of the adrenal glands.	2
11.	Diseases of the hypothalamic-pituitary system. Obesity. Diseases of the genital glands. Final control	2
12.	Diseases of the genital glands.	2
	Total	24

### 6. Independent studying

№	Topics	Hours
1.	Preparation for practical training on the topic №1 "Diabetes, classification, etiology, pathogenesis."	2
2.	Preparation for practical training on the topic №2 "Diabetes, : clinic, diagnosis. Mastering skills to analyze data of laboratory research methods (glucose tolerance test, glycemic profile, C-peptide, HbA1c, lipids).	2
3.	Preparation for practical training on the topic №3 "Diabetes mellitus type 1, modern methods of therapy." Mastering the skills of interpreting the glycemic profile, the level of glycosylated hemoglobin, prescriptions of insulinotherapy.	2
4.	Preparation for practical training on the topic №4 "Diabetes mellitus type 2, modern methods of therapy." Mastering the skills of interpreting the glycemic profile, the level of glycosylated hemoglobin, prescriptions for basic sugar-lowering drugs.	2
5.	Preparation for practical training on the topic №5 "Acute and chronic complications of diabetes. " Mastering the skills of providing medical care to patients with ketoacidosis, diabetic ketoacidotic and hypoglycemic comas.	2
6.	Preparation for practical training on the topic №6 "Features of the course and treatment of diabetes in surgical patients, during pregnancy. " Mastering the skills of providing medical care to pregnant women and patients with surgical pathology and diabetes mellitus.	2
7.	Preparation for practical training on the topic №7 "Iodine deficiency diseases of the thyroid gland. Signs of an endemic area according to WHO. Clinic, diagnosis, prevention and treatment. Hypothyroidism and thyroiditis. Classification, diagnosis, clinic, treatment". Mastering the skills of treating data from hormonal examination of the thyroid gland (TSH, T3, T4, ATPO, thyroglobulin).	2
8.	Preparation for practical training on the topic №8 "Thyrotoxicosis. Clinical forms. Diagnosis, treatment. Thyroid cancer. Classification, clinic, diagnosis, treatment. Diseases of the parathyroid glands". Mastering the skills of treating data from hormonal examination of the thyroid gland (TSH, T3, T4, calcitonin, ATPO, antibodies to TSH receptors, parathyroid hormone).	2
9.	Preparation for practical training on the topic №9 "Diseases of the adrenal glands. Chronic adrenal cortex failure. Etiology, pathogenesis, clinic, diagnosis, prevention and treatment. " Mastering the skills of treating the data of hormonal examination of the adrenal glands (ACTG, cortisol, aldosterone, renin, blood electrolytes).	2
10.	Preparation for practical training on the topic №10 "Hormonal-active tumors of the adrenal glands. " Mastering the skills of treating the data of hormonal examination of the adrenal glands (ACTG, cortisol, aldosterone, renin, blood electrolytes and methanephrine in urine).	2



11.	Preparation for practical training on the topic №11 "Diseases of the hypothalamic-pituitary system. Obesity. " Mastering the skills of determining the degree of obesity by BMI. Mastering the skills of treating hormonal examination data (STH, IФP-1, vasopressin) and urine analysis by Zimnitsky.	2
12.	Preparation for practical training on the topic №12 "Diseases of the genital glands. " Mastering the skills of treating hormonal examination data (STH, IФP-1, prolactin, gonadotropins).	2
13.	Preparation for the credit	6
	Total	30

7. **Personal assignments are not specified.**

8. **Teaching Methods**

Practical, visual, verbal, work with a book, video method

- Types of control (current and final)
- Form of final control - differentiated credit
- Evaluation criteria

Types of educational activities of students according to the curriculum are:

- a) practical classes,
- b) independent work.

Educational classes are practical because they are organized in the following way:

1. Preparatory stage (organizational, setting and justifying educational goals, measuring the initial level of the students' knowledge).
2. The main stage (formation of professional skills and skills in determining the general principles of pharmacokinetics, pharmacodynamics, prescribing, solving typical pharmacotherapeutic problems and test tasks).
3. The final stage (control of the final level of knowledge and skills, solving atypical problems, test tasks). Summing up the general results. Tasks for the next classes.

#### Plan and organizational structure of lessons

№ з/п	Stages of the lesson	Duration	Tools	Equipment
<b>1.</b>	<b>Preparatory stage</b>	<b>25min.</b>		
1.1.	Organizational questions	5 min.		
1.2.	Checking tasks that were set for independent preparation for classes.	10 min.	Textbooks	
1.3.	Control and assessment of the entry level of students	10 min.	Methodological materials of the department	
<b>2.</b>	<b>The main stage</b>	<b>40min.</b>		
2.1.	Formation of professional skills (correction of prescriptions, control of determination by the student of group, therapeutic tasks, curation of specialized patients.	30 min.	Textbooks, tables, stands, clinical protocol, letters of medical appointments	Projector multimedia, laptop, board
2.2.	Solving situational tasks and their assessment	10min.	Textbooks, tables, stands	
<b>3.</b>	<b>The final stage</b>	<b>25 min.</b>		
3.1.	Final test control	10min.	Methodological materials of the department	
3.2.	General assessment of students' educational activities	10min.	Criteria for evaluating students' knowledge	
3.3.	Organizational issues. Tasks for independent preparation for the next class.	5 min.	List of class, methodical materials for practical classes and independent work	

#### 9. Control methods:

Spoken (oral), handwritten, test, programmed, practical control, self-control.

For the purpose of intensifying the educational process, systematic assimilation of educational material, establishing feedback with each one student, timely control and correction of the educational process, increasing motivation, reducing missing classes, student responsibility for the results of educational activities, the success of each student is evaluated according to the rating system.

Assessment is one of the final stages of educational activity and determination of learning success. The grade for the discipline is set as the average of the grades for the current educational activity, which is set when evaluating theoretical knowledge and practical skills in accordance with the lists determined by the discipline program.

**10. Current control** is carried out on practical exercises in accordance with specific goals. Following means of diagnostics of the level of preparation of students are recommended: test control (machine and machine-based), solution of situational problems, control of practical skills, in particular - the ability to properly conduct the patient's curation, assign and interpret the results of laboratory and instrumental examination, justify the diagnosis on the basis of analysis of clinical and auxiliary methods of examination.

When marking students' progress in studying each topic of the module, students are given grades on a 4-point (traditional) scale using the criteria of evaluation adopted in universities and approved by the cycle medical commission. This takes into account all types of work provided for by methodological development for the study of the topic.

*Criteria for assessing knowledge*

1. In the practical lesson, the student receives the mark "**excellent**": the student answered 90-100% of format A tests correctly. If the student has shown full knowledge of the topic and has given complete and correct answers to the questions asked by the teacher. Correctly, clearly and logically and fully answers all standardized questions of the current topic, including questions of the lecture course and independent work. Reads test results fluently, solves situational problems of increased complexity, knows how to summarize material, knows the methods of examining a patient to the extent necessary for a doctor's work

2. The student receives the mark "**good**" if he/she: the student answered 70-89% of format A tests correctly. Knows the subject studied in full complexity. Gives correct but not quite full answers to additional questions, provides answers with the help of the teacher. Able to solve situational problems of easy and medium complexity. Possesses the necessary practical skills and methods of their implementation in an amount that exceeds the required minimum.

3. The student receives the mark "**satisfactory**" if: the student answered 50-69% of format A tests correctly. Incomplete, with the help of additional questions, answers the standardized questions of the current topic, lecture course and independent work. During the answer and demonstration of practical skills, the student makes mistakes. The student solves only the easiest problems, possesses only the mandatory minimum of research methods.

4. The mark "**unsatisfactory**" is received by a student who: The student answered less than 50% of the A-format tests. Cannot answer all questions even with the help of the teacher. Does not correct the leaves of the appointment. Additional questions are not answered, according to which the answer can be assessed as "satisfactory." The student can make up for the missed topics but no more than 3 times, thereby getting the number of points more than the minimum to receive a credit on the discipline. Evaluation of the current educational activities: carried out at each practical class on the relevant topic and has a definition according to the ESTS system and the traditional scale adopted in Ukraine.

For each topic students are given grades on a 4-point traditional scale, then for each student his average score is calculated for the discipline and according to Table 1 "Instructions for assessing the educational activities of students..." is converted to the appropriate points."

**11. Form of final control of learning success**

Semester differentiated credit is a form of final control, which consists in assessing the student's mastering of educational material from the discipline on the basis of current control and individual test tasks performed on the day of the test. **The final control** is made on the day and time determined by the dean in accordance with the schedule of diffzaliki agreed with the department, in the form of test control (80 tests) in the MISA system.

**12. Grading system**

**Current educational activities:**

Maximum score: 120 points.

Minimum points for admission to final control: 72

**Final control:**

Calculation of the number of points is carried out on the basis of the grades received by the student on a 4-point (national) scale during the study of the discipline, by calculating the arithmetic mean (AM), rounded up to two decimal numbers. The obtained value is converted into points on a multi-point scale as follows:

$$x = \frac{CA \times 120}{5}$$

The students must obtain at least 60% of the maximum number of the points for the current educational activity (in case of a 200-points scale - at least 120 points).

Conversion of the average grade for the current activity  
in a multi-point scale for disciplines ending with an exam (or differentiated credit)

4-point scale	200-point scale
5	120
4.95	119
4.91	118
4.87	117
4.83	116
4.79	115
4.75	114
4.7	113
4.66	112
4.62	111
4.58	110
4.54	109
4.5	108

4-point scale	200-point scale
4.45	107
4.41	106
4.37	105
4.33	104
4.29	103
4.25	102
4.2	101
4.16	100
4.12	99
4.08	98
4.04	97
3.99	96
3.95	95

4-Point scale	200-Point scale
3.91	94
3.87	93
3.83	92
3.79	91
3.74	90
3.7	89
3.66	88
3.62	87
3.58	86
3.54	85
3.49	84
3.45	83
3.41	82

4-Point scale	200-Point scale
3.37	81
3.33	80
3.29	79
3.25	78
3.2	77
3.16	76
3.12	75
3.08	74
3.04	73
3	72
Less than 3	Unsatisfactory

**Assessment of independent work.**

Assessment of Independent of the students takes place during the current control of the topic in the class. Learning of the topics allocated to independent work is monitored in a credit. Individual tasks are taken into account when calculating a grade for the practical class under the conditions of their successful completion and presentation.

*Conversion of the number of points for semester control into a grade on the ECTS scale and on the four-point (traditional) scale.*

Students who study in one course in their specialty are marked on the ECTS scale based on the number of points scored for semester control as follows:

ECTS	Statistics
«A»	Top 10% of students
«B»	Next 25% of students
«C»	Next 30% of students
«D»	Next 25% of students
«E»	Last 10% of students

Rating with the assignment of grades "A," "B," "C," "D," "E" is carried out by deans or other structural subdivision by the decision of the academic council educational department for students of this course who study in one specialty and have successfully completed the study of the discipline. Ranking of students - citizens of foreign countries is recommended by the decision of the Academic Council to conduct in the same array with students - citizens of Ukraine who study in the same specialty.

Students who have received "FX" and "F" ("2") grades are not included in the list of students who are graded even after the module has been reassigned. Such students automatically receive an "E" score after overpayment.

Grades in the discipline "FX," "F" ("2") are presented to students who are not enrolled at least one module in the discipline after completing its study.

The score "FX" is given to students who have scored the minimum number of points for the current educational activity, but who are not credited with the final control of the module. This category of students has the right to re-assign the final control over the approved schedule (but not later than the beginning of the next semester). Re-taking of the final test is allowed no more than two times.

The grade "F" is given to students who have attended all classes from the module, but have not scored a minimum number of points for current educational activities and are not allowed to complete control. This category of students has the right to re-study the module.

With dean's permission the student can increase the assessment of the discipline by reassigning the final control (no more than three times for the entire period of study).

Semester test scores of students who have successfully completed the discipline program are also converted by the department to a traditional four-point scale according to the absolute criteria as below in the table.

Points	Grade on a 4-point scale
170 – 200	«5»
140 – 169	«4»
139 – 122	«3»
< 121	«2»

*Note 1. According to the decision of the Academic Council, universities can set the criteria of 180-200 points for assessment "5," for the assessment of "4" - criteria of 140-179 points.*

*Note 2. When using other scales, proportional criteria are used*

*Note 3. These criteria are also used when determining the module evaluation if necessary.*

The evaluation of ECTS to the traditional four-point scale is NOT converted because the ECTS scale and the four-point scale are **independent**.

The multibal and four-point scales characterize the actual success of each student in assimilating the discipline. The ECTS scale is a relative, comparative, rating that determines the student's belonging to the group of the best or the worst among the reference group of classmates (faculty, specialty). Therefore, the score "A" on the scale can not be equal to the estimate "excellent," and the score "B" - the assessment "good," etc. As a rule, when converting from a multibal scale, the boundaries of grades "A," "B," "C," "D," "E" on the ECTS scale do not coincide with the boundaries of the grades "5," "4," "3" on the traditional scale.

### 13. Methodological support

- Program of discipline
- Plans for practical classes and independent work of students
- Methodological guidelines for practical classes for students
- Methodological guidelines for practical classes for teachers
- Methodological materials that ensure the student's work
- Test and control tasks for practical classes

### 14. Recommended literature

#### Basic:

1. A Case-Based Guide to Clinical Endocrinology 3rd ed. 2022 Edition. Terry F. Davies. January 5, 2022. -578p.
2. 100 multiple choice questions for theory revue in endocrinology for students of faculty of medicine (Methodological materials) / Kikhtyak O.P. – Lviv, 2005. – 36 p.
3. Oxford Textbook of Endocrinology and Diabetes 3e. John Wass, Wiebke Arlt, Robert Semple Aug 15, 2021
4. Endocrinology and Diabetes: A Problem Oriented Approach 2<sup>nd</sup> ed. 2022 Edition. Francisco Bandeira, Hossein Gharib, Luiz Griz, Manuel Faria. March 4, 2022. – 513p.
5. Davidson's Principles and Practice of Medicine 23<sup>rd</sup> Edition. Editors: Stuart Ralston, Ian Penman, Mark Strachan Richard Hobson. Elsevier.– 2018. – 1440p.
6. Endocrinology and Systemic Diseases 1st ed. 2021 Edition. Piero Portincasa, Gema Frühbeck, Hendrik M. Nathoe. November 5, 2020. – 495p.
7. USMLE Step 2 CK Lecture Notes 2017: Internal Medicine (Kaplan Test Prep). - 2016. - Published by Kaplan Medical. - 474 pages.
8. Endocrine Board Review 12th Edition Paperback. Serge a Jabbour. October 15, 2020. 258p.
9. Handbook of Diagnostic Endocrinology 3rd Edition. William E. Winter, Lori J. Sokoll, Brett Holmquist, Roger L. Bertholf. October 17, 2020. – 744p.
10. Endocrine Pathophysiology: A Concise Guide to the Physical Exam 1st ed. 2020 Edition. Andrea Manni, Akuffo Quarde. July 23, 2020. – 217p.

#### Optional

1. Polyendocrine Disorders and Endocrine Neoplastic Syndromes (Endocrinology) 1st ed. 2021 Edition. Annamaria Colao, Marie-Lise Jaffrain-Rea, Albert Beckers. August 12, 2021. – 448p.
2. World's Okaest Endocrinology Nurse Practitioner: 6x9 Inches Graph Paper Notebook With 100 Blank Pages To Write Memories, Organize Schedules or Take Notes In Paperback. Oxana Zubycka. June 21, 2021. – 100p.
3. Never Underestimate the Power of a Endocrinology Nurse Practitioner: Dotted Notebook 120 pages 6x9 with Mate Cover, Gift for Co-workers, Family And Friends. Viki Starling. June 13, 2021. – 120p.
4. Essential Endocrinology and Diabetes (Essentials) 7th Edition. Richard I. G. Holt, Neil A. Hanley. June 1, 2021. – 336p.
5. International Textbook of Diabetes Mellitus, 2 Volume Set. Ed. By R.A. Defronzo, E. Ferrannini, P. Zimmet, G. Alberti. 4<sup>th</sup> Edition, 2015. – 1228p.
6. Harrison's Endocrinology. Ed. by J. Larry Jameson, Mc Graw – Hill., New York, Chicago, Toronto. e.a. 4<sup>rd</sup> edition, 2016. - 608 p.
7. Williams Textbook of Endocrinology. Ed. by Henry M. Kronenberg, Shlomo Melmed, Kenneth S. Polonsky, P. Reed Larsen. Saunders. 13 edition, 2015. – 1936p.

### 15. Online resources

1. <https://www.diabetes.org>
2. <http://www.oxfordmedicaleducation.com/>
3. <https://www.thyroid.org>