MINISTRY OF HEALTH OF UKRAINE
ODESA NATIONAL MEDICAL UNIVERSITY
Department of Internal Medicine No.1

CONFIRMED by
Vice-rector for scientific and pedagogical work

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September 1st, 2025

WORKING PROGRAM OF ACADEMIC DISCIPLINE

ACTUAL ISSUES OF ENDOCRINOLOGY

Level of higher education: second (master's degree)

Field of knowledge: 22 "Health care"

Specialty: 222 "Medicine"

Educational and professional program: Medicine

2025

The work program is based on the educational and professional program "Medicine" for training specialists of the second (master's) level of higher education in the specialty 222 "Medicine" of the field of knowledge 22 "Healthcare", approved by the Academic Council of ONMedU (minutes No. 10 of June 27, 2024) and the educational and professional program "Medicine" for training specialists of the second (master's) level of higher education in the specialty I 2 "Medicine" of the field of knowledge I "Healthcare and Social Security", approved by the Academic Council of ONMedU (minutes No. 10 of June 26, 2025).

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The working program was approved at the meeting of the department of Internal Medicine No.1
Protocol No.1 dated 28.08.2025

Head of the department _____ Yurii KARPENKO

Approved by the guarantor of
the educational and professional program _____ Valeriia MARICHEREDA

Approved by the subject cycle methodical commission for therapeutic disciplines of ONMedU
Protocol No.1 dated 29.08.2025

Head of the subject cycle methodical commission _____ Olena VOLOSHYNA

Revised and approved at a meeting of the department of Internal Medicine №1
Protocol No. __ dated «____» _____ 20_____

Head of department _____ Yurii KARPENKO

Revised and approved at a meeting of the department of the department of Internal Medicine №1
Protocol No. __ dated «_____» _____ 20_____

Head of Department _____ Yurii KARPENKO

1.Description of the academic discipline

Name of indicators	Field of knowledge, specialty, specialization, level of higher education	Characteristics of the academic discipline
The total number of: Credits: 3 Hours: 90 Content modules: 1	Field of knowledge 22 "Health care" Specialty 222 "Medicine" Level of higher education second (master's degree**)**	*Full-time education* *Elective discipline*
		Course: 4
		Semesters VII - VIII
		Lectures (0 hours)
		Seminars (0 hours)
		Practical (30 hours)
		Laboratory (0 hours)
		Independent work (60 hours)
		Final control form - credit

The purpose and tasks of the educational discipline, competences, program learning outcomes.

Purpose: Acquisition by the student of higher education of knowledge and formation of elements of professional competences in the field of endocrinology and improvement of skills and competences acquired during the study of previous disciplines.

Task:

1. Formation of skills and abilities in the clinical examination of patients with the main diseases of the endocrine system and to be able to analyze their results;
2. Formation of abilities and skills in substantiation of clinical diagnosis, drawing up a plan for laboratory and instrumental research of patients with the most common diseases of the endocrine system and their complications;
3. Mastering the ability to determine treatment tactics and prevent the most common diseases of the endocrine system and their complications.

The process of studying the discipline is aimed at forming elements of the following competencies :

General competencies (GC)

GC1 – Ability to abstract thinking, analysis and synthesis .
GC2 – 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 activity.
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.
GC9 – Ability to communicate in a foreign language
GC10 –Ability to use information and communication technologies
GC11 – Ability to search, process and analyze information from various sources.
GC12 – Determination and perseverance regarding the assigned tasks and assumed responsibilities.
GC13 – Awareness of equal opportunities and gender issues.
GC14 – The ability to realize one's rights and responsibilities as a member of society, to be aware of the values of a public (free democratic) society and the need for its sustainable development, the rule of law, the rights and freedoms of a person and a citizen in Ukraine

GC15 – The ability to preserve and multiply moral, cultural, scientific values and achievements of society based on understanding the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, technology and technologies, to use various types and forms of motor activity for active recreation and leading a healthy lifestyle
GC17 – The desire to preserve the environment

Special competencies(SC):

SC1 – Ability to collect medical information about the patient and analyze clinical data
SC2 – Ability to determine the necessary list of laboratory and instrumental studies and evaluate their results
SC3 – Ability to establish a preliminary and clinical diagnosis of the disease
SC4 – The ability to determine the necessary regime of work and rest in the treatment and prevention of diseases
SC5 – The ability to determine the nature of nutrition in the treatment and prevention of diseases
SC6 – Ability to determine the principles and nature of treatment and prevention of diseases
SC7 – Ability to diagnose emergency conditions
SC8 – Ability to determine tactics and provide emergency medical care
SC9 – Ability to carry out medical evacuation measures
SC10 – Ability to perform medical manipulations
SC11 – 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 including an early intervention system
SC13 – Ability to carry out sanitary and hygienic and preventive measures
SC14 – Ability to plan and carry out preventive and anti-epidemic measures for infectious diseases
SC15 – The ability to conduct an examination of working capacity
SC16 – Ability to maintain medical documentation, including electronic forms
SC17 – The ability to assess the impact of the environment, socio-economic and biological determinants on the state of health of an individual, family, population
SC18 – The ability to analyze the activity of a doctor, unit, health care institution, ensure the quality of medical care and increase the efficiency of the use of medical resources
SC20 – Ability to conduct epidemiological and medical statistical studies of the health of the population; processing of social, economic and medical information
SC21 – The ability to clearly and unambiguously convey one's own knowledge, conclusions and arguments on health care problems and related issues to specialists and non-specialists, in particular to people who are studying
SC23 – Ability to develop and implement scientific and applied projects in the field of health care
SC24 – Adherence to ethical principles when working with patients and laboratory animals
SC25 – Adherence to professional and academic integrity, to be responsible for the reliability of the obtained scientific results
SC26 – The ability to determine the management tactics of persons subject to dispensary supervision
SC28 – Ability to apply fundamental biomedical knowledge at a level sufficient to perform professional tasks in the field of health care

Program learning outcomes (PLO):

PLO1 – Have thorough knowledge of the structure of professional activity. To be able to carry out professional activities that require updating and integration of knowledge. To be responsible for professional development, the ability for further professional training with a high level of autonomy.
PLO2 – Understanding and knowledge of fundamental and clinical biomedical sciences, at a level sufficient for solving professional tasks in the field of health care.
PLO3 – Specialized conceptual knowledge, which includes scientific achievements in the field of health care and is the basis for conducting research, critical understanding of problems in the field of medicine and related interdisciplinary problems including an early intervention system.
PLO4 – Identify and identify leading clinical symptoms and syndromes (according to list 1); according to standard methods, using preliminary data of the patient's history, data of the patient's examination, knowledge about the person, his organs and systems, establish a preliminary clinical diagnosis of the disease (according to list 2).
PLO5 – Collect complaints, life anamnesis and diseases, assess the psychomotor and physical development

of the patient, the state of organs and systems of the body, based on the results of laboratory and instrumental studies, evaluate information about the diagnosis (according to list 4), taking into account the age of the patient.
PLO6 – To establish a final clinical diagnosis by making a reasoned decision and analyzing the received subjective and objective data of clinical, additional examination, carrying out differential diagnosis, observing the relevant ethical and legal norms, under the control of the managing physician in the conditions of a health care institution (according to list 2).
PLO7 – Prescribe and analyze additional (mandatory and optional) examination methods (laboratory, functional and/or instrumental) (according to list 4) of patients with diseases of organs and body systems for differential diagnosis of diseases (according to list 2).
PLO8 – Determine the main clinical syndrome or symptom that determines the severity of the condition of the victim/injured (according to list 3) by making a reasoned decision about the person's condition under any circumstances (in the conditions of a health care facility, outside its borders), including in conditions of emergency and hostilities, in field conditions, in conditions of lack of information and limited time.
PLO9 – Determine the nature and principles of treatment (conservative, operative) of patients with diseases (according to list 2), taking into account the patient's age, in the conditions of a health care institution, outside its borders and at the stages of medical evacuation, including in field conditions, on the basis of a preliminary clinical diagnosis, observing the relevant ethical and legal norms, by making a reasoned decision according to existing algorithms and standard schemes, in case of the need to expand the standard scheme, be able to justify personalized recommendations under the control of the head physician in the conditions of a medical institution.
PLO10 – Determine the necessary mode of work, rest and nutrition on the basis of the final clinical diagnosis, observing the relevant ethical and legal norms, by making a reasoned decision according to existing algorithms and standard schemes.
PLO12 – To assess the general condition of the patient by making a reasoned decision according to existing algorithms and standard schemes, observing the relevant ethical and legal norms.
PLO14 – Determine tactics and provide emergency medical care in emergency situations (according to list 3) in limited time conditions according to existing clinical protocols and standards of treatment.
PLO15 – To organize the provision of medical aid and medical evacuation measures to the population and military personnel in emergency situations and hostilities, including in field conditions
PLO16 – Form rational medical routes for patients; organize interaction with colleagues in their own and other institutions, organizations and institutions; to apply tools for the promotion of medical services in the market, based on the analysis of the needs of the population, in the conditions of the functioning of the health care institution, its division, in a competitive environment.
PLO17 – Perform medical manipulations (according to list 5) in the conditions of a medical institution, at home or at work based on a previous clinical diagnosis and/or indicators of the patient's condition by making a reasoned decision, observing the relevant ethical and legal norms.
PLO18 – To determine the state of functioning and limitations of a person's vital activities and the duration of incapacity for work with the preparation of relevant documents, in the conditions of a health care institution, based on data about the disease and its course, peculiarities of the person's professional activity, etc. Maintain medical documentation regarding the patient and the contingent of the population on the basis of regulatory documents.
PLO19 – Plan and implement a system of anti-epidemic and preventive measures regarding the occurrence and spread of diseases among the population.
PLO21 – Search for the necessary information in the professional literature and databases of other sources, analyze, evaluate and apply this information.
PLO22 – Apply modern digital technologies, specialized software, and statistical methods of data analysis to solve complex healthcare problems.
PLO23 – Assess the impact of the environment on human health in order to assess the morbidity of the population.
PLO24 – To organize the necessary level of individual safety (own and the persons he cares for) in case of typical dangerous situations in the individual field of activity.
PLO25 – It is clear and unambiguous to convey one's own knowledge, conclusions and arguments on health care problems and related issues to specialists and non-specialists.
PLO27 – Communicate freely in the state language and in English, both orally and in writing to discuss professional activities, research and projects .

PLO30 – Determine the management tactics of persons subject to dispensary supervision (children, pregnant women, workers whose professions require mandatory dispensary examination).
PLO31 – To determine the management tactics of persons suffering from chronic infectious diseases subject to dispensary supervision.

As a result of studying the academic discipline, the student of higher education has to:
Know: etiology, pathogenesis, clinic, diagnosis, treatment, prevention of common diseases of the endocrine system.
Be able:

- Collect data on patient complaints, medical history, life history of patients with diseases endocrine system and their complications;
- Evaluate information about the diagnosis using a standard procedure, based on the results of laboratory and instrumental studies. Determine the list of necessary clinical laboratory and instrumental studies and evaluate their results (according to list 4).
- Highlight the leading clinical symptom or syndrome (according to list 1). Establish a preliminary diagnosis, carry out differential diagnosis and determine the clinical diagnosis of the disease (according to list 3).
- Determine the principles of treatment of diseases, the necessary mode of work and rest, the nature of nutrition (according to list 2).
- Diagnose emergency conditions (according to list 3).
- Determine tactics and provide emergency medical care (according to list 3).

Master the skills:

- Communication and clinical examination of the patient
- Perform medical manipulations (according to list 5) for diseases of the cardiovascular system, blood and hematopoietic organs.
- Keep medical records.

3. The content of the academic discipline

Content module 1
Basics of diagnosis, treatment and prevention of major endocrine diseases.

Topic 1. Diabetes mellitus: etiology, pathogenesis, classification, clinic, diagnosis. Diabetes mellitus type 1: modern methods of treatment.

Definition of diabetes mellitus. Epidemiology of diabetes in Ukraine and the world, disease forecast, 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. Diabetes mellitus type 2: the role of genetic predisposition, obesity, external factors. Insulin resistance and impaired insulin secretion. Classification of glycemia disorders, clinical forms of diabetes. Diabetes clinic. The main clinical symptoms of diabetes. Signs of different types of diabetes. Diagnostic criteria for diabetes and other categories of hyperglycemia. Indications and rules for conducting an oral glucose tolerance test. Diagnostic value determination of glycated hemoglobin , C - peptide, etc.
General principles of diabetes therapy. Criteria for compensation of carbohydrate metabolism in patients with type 1 diabetes mellitus. Insulin therapy. Characteristics of the main insulin preparations. Indications for their use. Classification of insulin preparations. Calculation of the daily need for insulin. Insulin dose adjustments using bread units. Regime of insulin therapy: traditional, intensified and pump. Indications for pump insulin therapy. Cell therapy. Complications of insulin therapy: hypoglycemic states, insulin allergy, post-injection lipodystrophy, insulin resistance, chronic insulin overdose (Somoji syndrome), insulin edema. Sanatorium-resort treatment. Protocols for providing assistance to patients with type 1 diabetes.

Topic 2. Type 2 diabetes: modern methods of treatment. Emergency conditions of diabetes. Hypoglycemic coma, hypoglycemic conditions. Ketoacidotic states and coma, hyperosmolar diabetic coma.

Algorithm for the treatment of type 2 diabetes. The main methods of treatment of diabetes mellitus type 2. Diet therapy of diabetes mellitus. Rational nutrition: physiological, energy value, restriction of refined carbohydrates, use of dietary fibers, trace elements, vitamins. Dosed physical activity and rules for its appointment. Drug therapy. Protocols for providing medical care to patients with type 2 diabetes.

Hypoglycemic coma: main causes of development, pathogenesis, clinic. Stages of development of hypoglycemic syndrome. Treatment. Prevention of hypoglycemia.

Ketoacidotic states with diabetic (hyperketonemic) coma. Etiology, pathogenesis, clinic, diagnosis, differential diagnosis, treatment. Hyperosmolar (non-acidotic) diabetic coma. Etiology, pathogenesis, clinic, diagnosis, differential diagnosis, treatment.

Topic 3. Chronic complications of diabetes: macroangiopathy, microangiopathy, neuropathy , diabetic foot syndrome. Iodine deficiency diseases of the thyroid gland. Nodular forms of goiter. Thyroid cancer. Diseases of the parathyroid glands.

Chronic complications of diabetes. Microvascular lesions (diabetic retinopathy, nephropathy, neuropathy); macrovascular lesions (ischemic heart disease, impaired cerebral circulation, diabetic foot). Classification, diagnosis and treatment. Diabetic neuropathy: clinic, diagnosis, treatment. Diabetic foot syndrome: clinic, diagnosis, treatment.

Definition of the concept of "iodine deficiency states". Manifestations of iodine deficiency.

Determination of the size of the thyroid gland. The concept of simple non-toxic and nodular forms of goiter. Iodine prevention: mass, group, individual. Restrictions on the use of preparations based on potassium iodide. Nodular forms of goiter. Pathomorphological classification of tumors of the thyroid gland. Justification of the diagnosis of thyroid cancer. Modern scheme of treatment and rehabilitation of thyroid cancer patients.

Diseases of the parathyroid glands. Hyperparathyroidism. Etiology. Pathogenesis. Classification. Clinic, clinical forms of hyperparathyroidism . Diagnostics. Differential diagnosis. Treatment. Indications for surgical treatment. Postoperative period of patients. Drug therapy.

Hypoparathyroidism. Etiology. Pathogenesis. Classification. Clinic. Diagnostics. Differential diagnosis. Forecast. Prevention. Treatment.

Topic 4. Thyroiditis. Thyrotoxicosis syndrome : clinical forms. Grave`s disease: treatment, complications. Hypothyroidism. Adrenal gland disease. Chronic adrenal insufficiency. Acute adrenal insufficiency.

Thyroiditis . Clinic, diagnosis and treatment.

Diseases accompanied by thyrotoxicosis. Etiology, pathogenesis, clinical manifestations of diffuse toxic goiter, thyrotoxic and endocrine ophthalmopathy . Clinical differences of nodular toxic goiter. Diagnosis of thyrotoxicosis. Medicinal and surgical treatment of toxic goiter, use of 131-iodine for therapeutic purposes. Complications of goiter treatment.

Hypothyroidism, etiology, pathogenesis, clinic, diagnosis. Primary, central, peripheral, subclinical, transient hypothyroidism . Timely diagnosis of congenital hypothyroidism. Age characteristics of the course of hypothyroidism. Hypothyroidism on the background of autoimmune polyendocrinopathies . Subclinical hypothyroidism. Treatment of hypothyroidism. Pregnancy and hypothyroidism.

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

Topic 5. Hormone-active tumors of the adrenal glands: primary hyperaldosteronism (Conn's syndrome). Pheochromocytoma . Androsteroma , cortiesteroma , corticosteroma.

Diseases of the hypothalamic-pituitary system: Cushing's disease. Acromegaly. Hypopituitarism , diabetes insipidus. Diseases of the gonads.

Classification of tumors of the adrenal glands. Cushing's syndrome (corticosteroma). Clinic, diagnosis and differential diagnosis, treatment. Androsteroma , corticoesteroma . Clinic, diagnosis and differential diagnosis, treatment. Primary hyperaldosteronism (Conn's syndrome). Clinic, diagnosis and differential diagnosis, treatment. Pheochromocytoma. Clinic, diagnosis and differential diagnosis, treatment. Definition of congenital hyperplasia of the adrenal cortex. Clinical forms, diagnosis, treatment.

Classification of hypothalamic-pituitary diseases. Acromegaly. Etiology and pathogenesis. Clinic. Diagnosis and differential diagnosis. Treatment. Cushing's disease . Etiology and pathogenesis. Classification. Clinic. Diagnosis and differential diagnosis. Treatment. Hyperprolactinemia syndrome . Classification. Etiology and pathogenesis. Clinic. Diagnosis, differential diagnosis. Treatment. Hypopituitarism . Etiology and pathogenesis. Clinic. Diagnosis and differential diagnosis. Treatment. Diabetes insipidus. Etiology and pathogenesis. Clinic. Diagnosis and differential diagnosis. Treatment. Somatotropic insufficiency. Giantism. Classification. Etiology and pathogenesis. Clinic. Diagnosis, differential diagnosis. Treatment.

Gonads in men and women. Normal physiology and anatomy of gonads. Congenital defects of sexual differentiation. Gonadal agenesis . Shereshevsky - Turner syndrome . Hermaphroditism syndrome. Cryptorchidism. Syndrome of mono- and anarchism . Klinefelter's syndrome . Disorders of sexual development in boys and girls. Climax in women and men.

4. The structure of the academic discipline

Topic name	**Number of hours**					
	Total	**Including**				
		lectures	**seminars**	**Practical classes**	**laboratories**	**Independent work**
Content module 1. Basics of diagnosis, treatment and prevention of major diseases cardiovascular system						
Topic 1: Diabetes mellitus: etiology, pathogenesis, classification, clinic, diagnostics. Diabetes mellitus type 1 diabetes: modern methods treatment.	18	0	0	6	0	12
Topic 2: Diabetes mellitus type 2 diabetes: modern methods of treatment. Emergency conditions of diabetes. Hypoglycemic coma, hypoglycemic conditions. Ketoacidotic conditions and coma, hyperosmolar diabetic coma.	18	0	0	6	0	12
Topic 3: Chronic	18	0	0	6	0	12

complications of diabetes: macroangiopathy, microangiopathy, neuropathy, diabetic foot syndrome. Iodine deficiency diseases of the thyroid gland. Nodular forms of goiter. Thyroid cancer. Diseases of the parathyroid glands						
Topic 4: Thyroiditis. Thyrotoxicosis syndrome: clinical forms. Grave`s disease: treatment, complications. Hypothyroidism. Adrenal gland disease. Chronic adrenal insufficiency. Acute adrenal insufficiency.	18	0	0	6	0	12
Topic 5: Hormone-active tumors of the adrenal glands: primary hyperaldosteronism (Conn's syndrome). Pheochromocytoma. Androsteroma, cortiesteroma, corticosteroma. Diseases of the hypothalamic-pituitary system: Cushing's disease . Acromegaly. Hypopituitarism, diabetes insipidus. Diseases of the gonads.	18	0	0	6	0	12
Total hours	**90**	**0**	**0**	**30**	**0**	**60**

5. Topics of lectures / seminars / practical classes / laboratories

5.1 Lecture classes are not provided

5.2 Topics of practical classes

No	Topic name	Number of hours
1	**Topic 1. Practical lesson 1.** Diabetes mellitus: etiology, pathogenesis, classification. Epidemiology of diabetes in Ukraine and the world, disease forecast, 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. Diabetes mellitus type 2: the role of genetic predisposition, obesity, external factors. Insulin resistance and impaired insulin secretion. Classification violations glycemia , clinical forms sugar diabetes _	2
2	**Topic 1. Practical lesson 2.** Diabetes mellitus: clinic, diagnosis Clinic of Diabetes mellitus. The main clinical symptoms of diabetes. Signs of different types of diabetes. Diagnostic criteria for diabetes and other categories of hyperglycemia. Indications and rules for conducting an oral glucose tolerance test. Diagnostic value determination of glycated hemoglobin, C-peptide, etc.	2
3	**Topic 1. Practical lesson 3.** Treatment of type 1 diabetes General principles of diabetes therapy. Criteria for compensation of carbohydrate metabolism in patients with type 1 diabetes mellitus. Characteristics of the main insulin preparations. Indications for their use. Classification of insulin preparations. Calculation of the daily need for insulin. Insulin dose adjustments using bread units. Regime of insulin therapy : traditional, intensified and pump. Indications for pump insulin therapy . Cell therapy. Complications of insulin therapy: hypoglycemic states, insulin allergy, post-injection lipodystrophy, insulin resistance, chronic insulin overdose (Somoji syndrome), insulin edema. Protocols for providing assistance to patients with type 1 diabetes.	2
4	**Topic 2. Practical lesson 4.** Treatment of type 2 diabetes Algorithm for the treatment of type 2 diabetes. The main methods of treatment of diabetes mellitus type 2. Diet therapy of diabetes mellitus. Rational nutrition: physiological, energy value, restriction of refined carbohydrates, use of dietary fibers, trace elements, vitamins. Dosed physical activity and rules for its appointment. Drug therapy. Protocols for providing medical care to patients with type 2 diabetes.	2
5	**Topic 2. Practical lesson 5.** Emergency conditions in diabetes mellitus Hypoglycemic coma, hypoglycemic states. Hypoglycemic coma: main causes of development, pathogenesis, clinic. Stages of development of hypoglycemic syndrome. Treatment. Prevention of hypoglycemia.	2
6	**Topic 2. Practical lesson 6.** Ketoacidotic states and coma. Hyperosmolar diabetic coma. Ketoacidotic states with diabetic (hyperketonemic) coma. Etiology, pathogenesis, clinic, diagnosis, differential diagnosis, treatment. Hyperosmolar (non-acidotic) diabetic coma. Etiology, pathogenesis, clinic, diagnosis, differential diagnosis, treatment.	2

7	**Topic 3. Practical lesson 7.** Chronic complications of diabetes: macroangiopathy , microangiopathy Microvascular lesions (diabetic retinopathy, nephropathy, neuropathy). Classification, clinic, diagnosis, treatment.	2
8	**Topic 3. Practical lesson 8.** Chronic complications of diabetes: neuropathy , diabetic foot syndrome. Diabetic neuropathy : clinic, diagnosis, treatment. Diabetic foot syndrome: clinic, diagnosis, treatment.	2
9	**Topic 3. Practical lesson 9.** Iodine deficiency diseases of the thyroid gland. Nodular forms of goiter. Thyroid cancer. Diseases of the parathyroid glands Definition of the concept of " iodine deficiency states". Manifestations of iodine deficiency. Determination of iodine-deficient areas by the prevalence of goiter in different age groups. Determination of the size of the thyroid gland. The concept of simple non-toxic and nodular forms of goiter. Iodine prevention: mass, group, individual. Nodular forms of goiter. Pathomorphological classification of tumors of the thyroid gland. Justification of the diagnosis of thyroid cancer. Modern scheme of treatment and rehabilitation of thyroid cancer patients. Diseases of the parathyroid glands. Hyperparathyroidism . Etiology. Pathogenesis. Classification. Clinic, clinical forms of hyperparathyroidism . Diagnostics. Differential diagnosis. Treatment. Indications for surgical treatment. Drug therapy. Hypoparathyroidism . Etiology. Pathogenesis. Classification. Clinic. Diagnostics. Differential diagnosis. Forecast. Prevention. Treatment..	2
10	**Topic 4. Practical lesson 10.** Thyroiditis . Thyrotoxicosis syndrome: clinical forms. Grave`s disease: complications, treatment. Thyroiditis . Clinic, diagnosis and treatment. Diseases accompanied by thyrotoxicosis. Etiology, pathogenesis, clinical manifestations of diffuse toxic goiter, thyrotoxic and endocrine ophthalmopathy . Clinical differences of nodular toxic goiter. Diagnosis of thyrotoxicosis. Medicinal and surgical treatment of toxic goiter, use of 131-iodine for therapeutic purposes. Complications of goiter treatment.	2
11	**Topic 4. Practical lesson 11.** Hypothyroidism. Hypothyroidism, etiology, pathogenesis, clinic, diagnosis. Primary, central, peripheral, subclinical, transient hypothyroidism . Timely diagnosis of congenital hypothyroidism. Age characteristics of the course of hypothyroidism. Hypothyroidism on the background of autoimmune polyendocrinopathies. Subclinical hypothyroidism. Treatment of hypothyroidism. Pregnancy and hypothyroidism.	2
12	**Topic 4. Practical lesson 12**. Adrenal gland disease. Chronic adrenal insufficiency. Acute adrenal insufficiency. Hormones of the adrenal cortex and medulla. Definition of the concept, prevalence of acute and chronic adrenal insufficiency. Chronic adrenal insufficiency (Addison's disease). Etiology, pathogenesis, clinic, diagnosis, prevention and treatment. Acute adrenal insufficiency. Etiology, pathogenesis, clinic, diagnosis, prevention and treatment.	2

13	**Topic 5. Practical lesson 13** Hormony-active tumors of the adrenal glands: primary hyperaldosteronism (Kohn's syndrome). Pheochromocytoma. Androsteroma, corticoesteroma, corticosteroma. Classification of tumors of the adrenal glands. Corticosteroma, androsteroma, corticoestroma. Clinic, diagnosis and differential diagnosis, treatment. Primary hyperaldosteronism (Conn's syndrome). Clinic, diagnosis and differential diagnosis, treatment. Pheochromocytoma . Clinic, diagnosis and differential diagnosis, treatment. Definition of congenital hyperplasia of the adrenal cortex. Clinical forms, diagnosis, treatment.	2
14	**Topic 5. Practical lesson 14** Diseases of the hypothalamic-pituitary system: Cushing's disease . Acromegaly. Hypopituitarism, diabetes insipidus Classification of hypothalamic-pituitary diseases. Acromegaly. Etiology and pathogenesis. Clinic. Diagnosis and differential diagnosis. Treatment. Cushing's disease . Etiology and pathogenesis. Classification. Clinic. Diagnosis and differential diagnosis. Treatment. Hyperprolactinemia syndrome . Classification. Etiology and pathogenesis. Clinic. Diagnosis, differential diagnosis. Treatment. Hypopituitarism . Etiology and pathogenesis. Clinic. Diagnosis and differential diagnosis. Treatment. Diabetes insipidus. Etiology and pathogenesis. Clinic. Diagnosis and differential diagnosis. Treatment. Somatotropic insufficiency. Giantism. Classification. Etiology and pathogenesis. Clinic. Diagnosis, differential diagnosis. Treatment.	2
15	**Topic 5. Practical lesson 15** Diseases of the gonads Gonads in men and women. Normal physiology and anatomy of gonads. Congenital defects of sexual differentiation. Gonadal agenesis . Shereshevsky - Turner syndrome . Hermaphroditism syndrome. Cryptorchidism. Syndrome of mono- and anarchism . Klinefelter's syndrome . Disorders of sexual development in boys and girls. Climax in women and men. **TEST***	2
Together		**30**

5.3 Seminar classes are not provided

5.4 Topics of laboratory classes

Laboratory classes are not provided.

6. Independent work of an applicant of higher education

No	Title of the topic / types of tasks	Number of hours
1	Topic 1. Preparation for practical classes 1-3	12
2	Topic 2. Preparation for practical classes 4-6	12
3	Topic 3. Preparation for practical classes 7-9	12
4	Topic 4. Preparation for practical classes 10-12	12
5	Topic 5. Preparation for practical classes 13-15	12
TOGETHER		**60**

7. Teaching methods

Practical classes: conversation, role-playing, solving clinical situational problems, practicing patient examination skills, demonstrating and practicing the skills of performing manipulations according to list 5, training exercises on differential diagnosis of diseases of the endocrine system.

Independent work : independent work with the recommended basic and additional literature, with electronic information resources, independent work with the bank of test tasks KROK-2, independent mastering of the algorithms of the clinical examination of the patient.

8. Forms of control and evaluation methods (including criteria for evaluating learning outcomes)

Current control: oral questioning, testing, assessment of practical skills, assessment of communication skills during role play, solving of situational clinical tasks, assessment of activity in class.

Final control : credit test

Evaluation of the current educational activity in a practical lesson :

1. Evaluation of theoretical knowledge on the subject of the lesson:
   - methods: survey, solving a situational clinical problem
   - the maximum score is 5, the minimum score is 3, the unsatisfactory score IS 2 .
2. Evaluation of practical skills and manipulations on the subject of the lesson:
   - methods: assessment of the correctness of the performance of practical skills
   - the maximum score is 5, the minimum score is 3, the unsatisfactory score IS 2.
3. Evaluation of work with a patient on the subject of the lesson:
   - methods: assessment of: a) communication skills of communication with the patient, b) the correctness of the appointment and evaluation of laboratory and instrumental studies, c) compliance with the differential diagnosis algorithm, d) substantiation of the clinical diagnosis, e) drawing up a treatment plan;
   - the maximum score is 5, the minimum score is 3, the unsatisfactory score IS 2 .

The grade for one lesson is the arithmetic average of all components and can only have an integer value (5, 4, 3, 2), which is rounded using the statistical method.

Current assessment criteria at the practical session

Score	Evaluation criteria
"5"	The applicant is fluent in the material, actively participates in the discussion and solution of the situational clinical problem and interpretation of clinical, laboratory and instrumental research data, expresses his opinion on the subject of the lesson, demonstrates clinical thinking.
"4"	The applicant has a good command of the material, participates in the discussion and solution of a situational clinical problem and interpretation of clinical, laboratory and instrumental research data with some errors, expresses his opinion on the subject of the lesson, demonstrates clinical thinking.
"3"	The applicant does not have sufficient knowledge of the material, is unsure of participating in the discussion and solution of the situational clinical problem and the interpretation of clinical, laboratory and instrumental research data with significant errors.
"2"	The applicant does not own the material, does not participate in the discussion and solution of the situational clinical problem and the interpretation of clinical, laboratory and instrumental research data.

A credit is awarded to an applicant who has completed all the tasks of the work program of the academic discipline, actively participated in practical classes, completed and defended an individual assignment and has an average current grade of at least 3.0 and has no academic debt.

Credit is given: at the last lesson. The credit score is the arithmetic mean of all components on a traditional four-point scale and has a value that is rounded using the statistical method to two decimal places.

9. Distribution of points received by applicants of higher education

The obtained average score for the academic discipline for applicants who have successfully mastered the work program of the academic discipline is converted from a traditional four-point scale to points on a 200-point scale, as shown in the table:

Conversion table of a traditional assessment into a multi-point scale

Traditional four-point scale	Multipoint 200-point scale
Excellent ("5")	185 - 200
Good ("4")	151 - 184
Satisfactory ("3")	120-150
Unsatisfactory ("2")	Below 120

A multi-point scale (200-point scale) characterizes the actual success of each applicant in learning the educational component. The conversion of the traditional grade (average score for the academic discipline) into a 200-point grade is performed by the information and technical department of the University.

According to the obtained points on a 200-point scale, the achievements of the applicants are evaluated according to the ECTS rating scale. Further ranking according to the ECTS rating scale allows you to evaluate the achievements of students from the educational component who are studying in the same course of the same specialty, according to the points they received.

The ECTS scale is a relative-comparative rating, which establishes the applicant's belonging to the group of better or worse among the reference group of fellow students (faculty, specialty). An "A" grade on the ECTS scale cannot be equal to an "excellent" grade, a "B" grade to a "good" grade, etc. When converting from a multi-point scale, the limits of grades "A", "B", "C", "D", "E" according to the ECTS scale do not coincide with the limits of grades "5", "4", "3" according to the traditional scale. Applicants who have received grades of "FX" and "F" ("2") are not included in the list of ranked acquirers. The grade "FX" is awarded to applicants who have obtained the minimum number of points for the current learning activity, but who have not passed the final examination. A grade of "F" is assigned to students who have attended all classes in the discipline, but have not achieved a grade point average (3.00) for the current academic activity and are not admitted to the final examination.

Applicants who study in one course (one specialty), based on the number of points scored in the discipline, are ranked on the ECTS scale as follows:

Conversion of the traditional grade from the discipline and the sum of points on the ECTS scale

Evaluation on the ECTS scale	Statistical indicator
A	Top 10% applicants
B	The next 25% of applicants
C	The next 30% of applicants
D	The next 25% of applicants
E	The next 10% of applicants

10. Methodological support

- Working program of the academic discipline

- Syllabus
- Methodological developments for practical classes
- Methodical recommendations for independent work of higher education applicants
- Multimedia presentations
- Situational clinical tasks
- Scenarios of role-playing games (if necessary)
- Electronic bank of test tasks by subdivisions of the discipline
- Educational and methodical literature

1. Karpenko Y.I., Savelieva O.V., etc. Actual issues of endocrinology: methodological recommendations for practical classes for applicants of higher education of the 4th year of the second master's level of the specialty "Medicine" / methodological recommendations for practical classes Odesa, ONMedU, 2025. 27 p.
2. Karpenko Y.I., Savelieva O.V., etc. Actual issues of endocrinology: methodological recommendations for independent work of applicants of higher education of the 4th year of the second master's level of the specialty "Medicine" / methodological recommendations for independent work Odesa, ONMedU, 2025. 10p.

11. Questions for preparation for the test.

1. Etiology and pathogenesis of diabetes.
2. Type 1 diabetes mellitus: the role of viral infection and autoimmune processes, genetic predisposition.
3. Diabetes mellitus type 2: the role of genetic predisposition, obesity, external factors.
4. Classification of glycemia disorders, clinical forms of diabetes. Diabetes clinic.
5. The main clinical symptoms of diabetes.
6. Characteristics of internal organ damage in diabetes: cardiovascular system, hepatobiliary system, urinary organs, diabetic osteoarthropathy .
7. Diagnostic criteria for diabetes and other hyperglycemia.
8. The main methods of treatment of diabetes mellitus: diet therapy, dosed physical activity, sugar-lowering pharmacotherapy, teaching the patient self-control.
9. Oral hypoglycemic drugs.
10. Insulin therapy .
11. Classification of insulin preparations.
12. Calculation of the daily need for insulin.
13. Regime of insulin therapy: traditional and intensified insulin therapy .
14. Complications of insulin therapy : hypoglycemic states, insulin allergy, post-injection lipodystrophy , insulin resistance , chronic insulin overdose (Somoji syndrome), insulin edema.
15. Diabetic nephropathy: stages of development, diagnosis, differential diagnosis, treatment and prevention.
16. Diabetic retinopathy: stages of the process, diagnosis, prevention and treatment.
17. Diabetic neuropathy: classification, diagnosis and treatment.
18. Diabetic foot syndrome: classification, diagnosis, treatment algorithm.
19. Hypoglycemic coma, hypoglycemic conditions. Etiology, pathogenesis, clinic, diagnosis, treatment.
20. Ketoacidotic states with diabetic (hyperketonemic) coma. Etiology, pathogenesis, clinic, diagnosis, differential diagnosis, treatment.
21. Hyperosmolar (non-acidotic) diabetic coma.
22. Lactic acidosis and coma.
23. Manifestations of iodine deficiency.
24. Determination of the size of the thyroid gland. Age dynamics of gland volume.
25. Definition of the term "goiter". The concept of simple non-toxic and nodular forms of goiter.

26. Iodine prevention: mass, group, individual.
27. Etiology, pathogenesis, clinical manifestations of Grave`s disease, thyrotoxic and endocrine ophthalmopathy .
28. Medicinal and surgical treatment of toxic goiter, use of 131-iodine for therapeutic purposes.
29. Hypothyroidism: etiology, pathogenesis and clinical signs. Justification of the diagnosis.
30. Treatment of hypothyroidism.
31. Thyroiditis: classification, etiology, clinical course, diagnosis, treatment.
32. Pathomorphological classification of tumors of the thyroid gland.
33. Modern scheme of treatment of thyroid cancer patients.
34. Hyperparathyroidism. Clinic, clinical forms. Indications for surgical treatment. Drug therapy.
35. Hypoparathyroidism. Clinic. Diagnostics . Differential diagnosis. Treatment.
36. Chronic adrenal insufficiency (Addison's disease). Etiology, pathogenesis, clinic, diagnosis, prevention and treatment.
37. Acute adrenal insufficiency. Etiology, pathogenesis, clinic, diagnosis, prevention and treatment.
38. Corticosteroma , glucosteroma . Clinic, diagnosis and differential diagnosis, treatment.
39. Androsteroma . Clinic, diagnosis and differential diagnosis, treatment.
40. Primary hyperaldosteronism (Conn's syndrome). Clinic, diagnosis and differential diagnosis, treatment.
41. Pheochromocytoma. Clinic, diagnosis and differential diagnosis, treatment.
42. Acromegaly: etiology and pathogenesis, clinic, diagnosis and differential diagnosis, treatment.
43. Cushing's disease : etiology and pathogenesis, clinic, diagnosis and differential diagnosis, treatment.
44. Hyperprolactinemia syndrome : classification, etiology and pathogenesis, clinic, diagnosis and differential diagnosis, treatment.
45. Hypopituitarism : etiology and pathogenesis, clinic, diagnosis and differential diagnosis, treatment
46. Diabetes insipidus: etiology and pathogenesis, clinic, diagnosis and differential diagnosis, treatment.
47. Hypopituitarism with predominant somatotropic insufficiency (pituitary dwarfism).
48. Pituitary gigantism: etiology and pathogenesis, clinic, diagnosis and differential diagnosis, treatment.
49. Shereshevsky-Turner syndrome .
50. Hermaphroditism syndrome.
51. Cryptorchidism.
52. Syndrome of mono- and anarchism .
53. Klinefelter's syndrome .
54. Disorders of sexual development in boys and girls.
55. Climax in women and men.

12 . Recommended literature:

Main:

1. Endocrinology : textbook for students. higher med. teach _ institutions / [P. M. Bodnar , Yu. I. Komisarenko , G. P. Mikhalchyshyn , etc.] ; under the editorship Yu. I. Komisarenko , G. P. Mikhalchyshyn . – 5th edition, updated . and additional _ – Vinnytsia : Nova Kniga, 2020. – 536 p.: ill . ISBN 978-966-382-821-3

Additional:

1. Primary hyperaldosteronism (prevalence, pathogenesis, diagnosis, treatment): monograph

Shidlovsky V.O. - Vol. 2020. - 156 p., pal. TV
2. Order of the Ministry of Health of Ukraine dated December 29, 2014 No. 1021 "Unified clinical protocol of primary, emergency, secondary (specialized) and tertiary (highly specialized) medical care "Type 1 diabetes in young people and adults."
3. Order of the Ministry of Health of Ukraine dated 24.07.2024 No. 1300 "Unified clinical protocol of primary and secondary (specialized) medical care "Type 2 diabetes".

13. Electronic information resources

1) http://moz.gov.ua – Ministry of Health of Ukraine
2) www.ama-assn.org - American Medical Association / American Medical Association
3) www.who.int - World Health Organization
4) www.dec.gov.ua/mtd/home/ - State Expert Center of the Ministry of Health of Ukraine
5) http://bma.org.uk - British Medical Association