

SYLLABUS

1. General information on the course

Full course name	Дерматовенерологія. Кардіологія. Ендокринологія
Full official name of a higher education institution	Sumy State University
Full name of a structural unit	Postgraduate Medical Educational Faculty. Кафедра сімейної медицини з курсом дерматовенерології
Author(s)	Melekhovets Oksana
Cycle/higher education level	The Second Level Of Higher Education, National Qualifications Framework Of Ukraine – The 7th Level, QF-LLL – The 7th Level, FQ-EHEA – The Second Cycle
Semester	1 week across 7 semester
Workload	Обсяг становить 2 кредити ЄКТС, 60 годин, з яких 36 годин аудиторних (6 годин лекцій, 30 годин практичних занять)
Language(s)	English

2. Place in the study programme

Relation to curriculum	Compulsory course available for study programme "Medicine"
Prerequisites	There are no specific pre-requisites
Additional requirements	There are no specific requirements
Restrictions	There are no specific restrictions

3. Aims of the course

The aim of the discipline is to achieve modern knowledge and professional skills based on a holistic view of the endocrine system, students gain practical skills of clinical examination, the ability to interpret the results of additional examinations on a list of symptoms, syndromes, and emergencies in the field of endocrine diseases.

4. Contents

Topic 1 Diabetes mellitus definition. Classification, etiopathogenesis. Clinical features and diagnosis of diabetes mellitus. Diabetes mellitus type 1, 2: differentiation diagnostic, clinical assessment, investigations.

Introduction to clinical endocrinology. The main mechanisms of endocrine diseases. Organization of endocrine care in Ukraine. Assessment of the initial level of knowledge. Diabetes mellitus: discussion of modern classifications, criteria for diagnosis and differential diagnosis of certain types of diabetes, etiopathogenesis, clinic. Differential diagnosis of clinical forms of obesity, classification. Metabolic syndrome. Influence of obesity on the occurrence of lesions of organs and systems of the human body. The study of this topic involves theoretical work and discussion in the classroom, solving practical problems, viewing multimedia content using virtual simulation; practice of practical skills, namely: 1. To define indications for carrying out the test of tolerance to glucose. Evaluate the results of the survey. 2. Evaluate the glycemic and glucosuric profile. 3. Determine the type of diabetes, its clinical course, and the state of compensation. 4. Determine the urine glucose and acetone level by an express method. Determine the level of glucose in the blood by an express method. 5. Determine the degree of obesity and BMI.

Topic 2 Chronic complications of diabetes mellitus: classification and diagnostic criteria, management.

Pathophysiology of development, definition, and classification of diabetic macro- and microangiopathies. Diabetic retinopathy, nephropathy, diabetic angiopathy of the lower extremities: stages of development, diagnosis, prevention, classification. Diabetic polyneuropathy: classification, etiopathogenesis, clinical manifestations, types of autonomic diabetic neuropathy. Diabetic foot syndrome: diff. diagnosis of neuropathic and ischemic forms of foot lesions, classification. Cerebrovascular and cardiovascular diabetic macroangiopathy. The study of this topic involves theoretical discussion and practical solutions to problems with the analysis of additional laboratory and instrumental research methods, the use of role situations, case-study, medical theater, elements of augmented reality, interactive testing.

Topic 3 The main principles of type 1 diabetes mellitus therapy. Insulin therapy. Insulin's Classification. Regimens of insulin therapy. Complications of insulin therapy.

Modern methods of treatment of type 1 diabetes mellitus: indications for insulin therapy, administration of insulin for newly diagnosed diabetes, insulin therapy regimens, complications of insulin therapy. Diet therapy. Glycemic index of food. Theoretical discussion, analysis of patients, case study, use of augmented reality. The practice of practical skills: 1. To appoint dietary treatment to the patient with diabetes. 2. Know oral hypoglycemic drugs and be able to prescribe them. 3. To determine secondary sulfanilamide resistance, to be able to treat it. 4. To appoint a mode of insulin therapy to the patient with diabetes. 5. Be able to use a syringe pen. 6. Develop a plan of self-control for diabetics.

Topic 4 Management of type 2 diabetes mellitus. The diet. The oral hypoglycemic agents. Criteria of compensation.

Modern methods of treatment of type 2 diabetes mellitus: oral hypoglycemic agents: sulfonamides (classification, mechanism of hypoglycemic effect, rules of administration, side effects of drugs). Features of hypoglycemic conditions caused by sulfonamides. Biguanides (indications and contraindications for use, side effects), thiazolidinediones, postprandial stimulators of insulin secretion, alpha-glucosidase inhibitors, incretin mimetics (analogs of glucagon-like peptide 1 (GPP-1), long-acting inhibitors of sodium-dependent cotransporter of glucose-2. Indications for insulin therapy, insulin therapy regimens, complications. Diet therapy. Theoretical discussion, analysis of patients, case study, use of augmented reality. The practice of practical skills: 1. To appoint dietary treatment to the patient with diabetes. 2. Know oral hypoglycemic drugs and be able to prescribe them. 3. To determine secondary sulfanilamide resistance, to be able to treat it. 4. To appoint a mode of insulin therapy to the patient with diabetes. 5. Be able to use a syringe pen. 6. Develop a plan of self-control for diabetics.

Topic 5 Emergencies in patients with diabetes. Diabetic coma pathogenesis, diagnosis and treatment. Acute states management.

Emergencies in patients with diabetes, clinic, diagnosis, prevention, emergency care. Causes of decompensation of diabetes. Diabetic ketonuria, ketoacidosis, diabetic coma: diagnosis, treatment. Hyperosmolar coma, lactic acid coma, hypoglycemic coma: conditions of origin, pathogenesis, features of the clinical course, treatment. Differential diagnosis. The study of this topic involves theoretical discussion in the classroom, the practice of emergency skills in the simulation center, the use of virtual simulation, testing.

Topic 6 Thyroid disease. Iodine deficiency conditions. Dysfunction of the thyroid gland. Goiter diagnostic criteria. Clinical assessment, investigations and management. Iodine prevention.

Anatomical and physiological data on the thyroid gland. Definition of goiter. The reasons for the increase in the size of the thyroid gland. Laboratory and instrumental methods of examination of the thyroid gland. Indications, contraindications to use, the diagnostic value of each method. Signs of endemic terrain according to the WHO. Methods of iodine prophylaxis. Influence of technogenic pollutants on the development of thyroid pathology. The study of this topic involves theoretical discussion and practical solutions to problems with the analysis of additional laboratory and instrumental research methods, the use of role situations, case-study, medical theater, testing, practical skills: 1. Determine the degree of goiter. 2. Evaluate the data of ultrasound examination and Doppler of the thyroid gland. 3. Evaluate the results of radioisotope examination of the thyroid gland. 4. Assess the condition of the thyroid system according to radioimmunological and enzyme-linked immunosorbent assays, evaluate ECG results.

Topic 7 Hypothyroidism. Thyroiditis. Nodular goiter. Thyroid cancer.

Hypothyroidism. Classification, diagnosis, clinic, treatment. Definition and classification of thyroiditis, etiopathogenesis, differential diagnosis, treatment. Nodes in the thyroid gland: etiology, clinic, classification, differential diagnosis of malignant and benign tumors. Indications and contraindications to surgical treatment of thyroid disease. The study of this topic involves theoretical discussion and practical solutions to problems with the analysis of additional laboratory and instrumental research methods, the use of role situations, case-study, medical theater, testing, practical skills: 1. Determine the degree of goiter. 2. Evaluate the data of ultrasound examination and Doppler of the thyroid gland. 3. Evaluate the results of radioisotope examination of the thyroid gland. 4. Assess the condition of the thyroid system according to radioimmunological and enzyme-linked immunosorbent assays, evaluate ECG results. 5. Prescribe treatment to a patient with hypothyroidism. 6. Detection of signs of thyroid cancer

Topic 8 Thyrotoxicosis. Diffuse toxic goiter.

Diagnosis, differential diagnosis, prevention, and treatment of thyrotoxicosis syndrome. Classifications of thyrotoxicosis (depending on the localization of the pathological factor (primary, secondary, tertiary), pathogenetic, clinical). The study of this topic involves theoretical discussion and practical solutions with the analysis of additional laboratory and instrumental research methods, use of role situations, case-study, testing of emergencies on phantoms, simulation center, acquisition of practical skills: 1. Prescribe treatment to patients with toxic goiter. 2. Diagnose thyrotoxicosis. Metabolic osteopathy of endocrine origin.

Topic 9 Thyrotoxic crisis. Diseases of the thyroid gland: hyper-and hypoparathyroidism.

Thyrotoxic crisis: diagnosis, clinic, treatment. Anatomical and physiological features of the parathyroid glands, their role in the regulation of calcium homeostasis. Hyperthyroidism, hypoparathyroidism: classification criteria, clinic, treatment. Metabolic osteopathy in endocrine diseases. Etiology and pathogenesis, differential diagnosis, treatment, and prevention. The study of this topic involves theoretical discussion and practical solutions with the analysis of additional laboratory and instrumental research methods, use of role situations, case-study, testing of emergencies on phantoms simulation center, acquisition of practical skills: 1. Prescribe treatment of thyrotoxic crisis. 2. Diagnose hypoparathyroidism. Metabolic osteopathy of endocrine origin. 3. Diagnose hyperparathyroidism.

Topic 10 The adrenal glands diseases: acute and chronic adrenal insufficiency, hormonally active tumors

Anatomical features of the adrenal glands, hormones of each layer of the adrenal cortex. Physiological action of adrenal hormones. Classification of chronic adrenal insufficiency, causes, clinical manifestations, diagnosis, principles of replacement therapy. Acute adrenal insufficiency (Addison's crisis, Waterhouse-Friedrichsen syndrome). Etiology, clinical manifestations, diagnosis, emergency care. Classification of hormonally active tumors of the cortical layer of the adrenal glands. Classification of Hypercorticism. Surgical treatment of adrenal tumors, preoperative preparation, postoperative period, rehabilitation of patients after adrenalectomy. The study of this topic involves theoretical discussion in the classroom, the practice of emergency skills in the simulation center, the use of virtual simulation, testing, the practice of practical skills: 1. Assess the condition of the adrenal glands according to clinical data, hormonal tests, ultrasound, arteriography tomography, MRI. 2. Prescribe treatment for Addison's crisis.

Topic 11 Diseases of the hypothalamic-pituitary system

The concept of hormones activity. Classification of hormones by chemical structure. The main functions of hormones, their genomic and extragenomic effects. Hormone synthesis, secretion, blood transport, and metabolism. Mechanisms of action of hormones. Regulation of endocrine functions. Anatomical and physiological data on the pituitary gland and hypothalamus. Classification of hypothalamic-pituitary diseases. Hyperprolactinemia syndrome, hypopituitarism, acromegaly, diabetes mellitus, prolactinoma. Etiology, pathogenesis, clinic, diagnosis, treatment. Pathology of growth and sexual development in children.

<p>Topic 12 Curation. Preparing to write a medical history</p> <p>Independent supervision of an endocrine patient. Preparing to write a medical history. In the absence of quarantine restrictions during the curation, the student is provided with a patient with endocrine pathology who is being treated in the endocrine departments of the medical institution. The student independently, but under the guidance of the teacher, conducts a clinical examination and interpretation of the results of examinations given in the medical history. The rules of writing and registration of medical history are regulated by the relevant regulations, which are set out in the guidelines of the department for writing educational medical history. In the presence of quarantine, the student is provided with a virtual patient.</p>
<p>Topic 13 Diseases of the gonads. Hypogonadism.</p> <p>Hypogonadism. Morphological structure of the endocrine part of the testis and ovary. Physiological effects of sex hormones. Classification of puberty disorders. Climax. A pathological course of menopause. Clinical manifestations in women and men. Treatment of pathological manifestations of menopause. Autoimmune polyglandular syndrome. Syndrome of multiple endocrine neoplasias. Theoretical discussion in the classroom, reports, and presentations, the practice of practical skills: 1. Be able to evaluate the craniogram and CT data, MRI of the skull. 2. Determine the type of physique. 3. Determine the degree of somatosexual development. 4. Determine the "bone age" according to radiography. 5. Evaluate the data of chromosomal analysis. 6. Identify types of violations of sexual differentiation. 7. Diagnose menopausal syndrome and prescribe treatment for pathological menopause</p>
<p>Topic 14 Defense of medical history.</p> <p>Defense of medical history includes the peculiarities of history taking, methods of examination, semiotics of lesions of the endocrine system, formulation and justification of diagnoses, providing recommendations to the patient, which was provided to the student for supervision.</p>
<p>Topic 15 Module control</p> <p>The module control includes written and oral answers to questions for the entire course of endocrinology, demonstration of acquired practical skills according to the list. Tickets contain 3 theoretical questions and cover all sections of the discipline (15 points each), 1 practical task (15 points), and the issue of emergency care (20 points).</p>

5. Intended learning outcomes of the course

After successful study of the course, the student will be able to:

LO1	Skills in surveying and clinical examination of a patient. Conduct surveys and physical examinations of patients with diseases of the endocrine system
LO2	Ability to determine the required set of laboratory and instrumental studies and to evaluate their results. Justify the use of basic invasive and non-invasive diagnostic methods used in endocrinology, determine the indications and contraindications for their implementation, possible complications
LO3	Ability to establish a provisional and clinical diagnosis of disease. Make a differential diagnosis, justify and formulate a diagnosis of major endocrine diseases. Identify the typical clinical picture of endocrine diseases, the main options and complications of endocrine diseases. To determine the etiological and pathogenetic factors of endocrine diseases
LO4	Ability to determine the necessary mode of work and rest in the treatment course.

LO5	5.Ability to determine a diet in the treatment course.
LO6	Ability to determine the principles of treatment and treatment modality
LO7	Ability to diagnose medical emergencies.
LO8	8.Ability to determine the approach to emergency medical care.
LO9	Skills in emergency medical procedures.
LO15	Ability to manage the patients who are subject to dispensary monitoring
LO16	Ability to perform disability examination
LO17	Ability to maintain medical records.
LO18	Ability to conduct epidemiological and medical-statistical research of public health; ability to process governmental, social, economic, and medical information.
LO19	19.Ability to assess the influence of environment, socio-economic and biological determinants on the health of a person, family, or population.

6. Role of the course in the achievement of programme learning outcomes

Programme learning outcomes achieved by the course.

For 222 Medicine:

PO1	Skills in surveying and clinical examination of a patient Collect patient's complaint data, medical history, history of life (including occupational history) at a healthcare institution, its subdivision, or at patient's home, by means of a standard survey.
PO2	Ability to determine the required set of laboratory and instrumental studies and to evaluate their results Evaluate information about diagnosis at a healthcare institution or its subdivision by means of a standard procedure using knowledge about a human, his organs and systems, based on the results of laboratory and instrumental studies (according to the List 4).
PO3	Ability to establish a provisional and clinical diagnosis of disease 3.1. Perform the following at a healthcare institution or its subdivision and among the assigned population
PO4	Ability to determine the necessary mode of work and rest in the treatment course Determine the necessary mode of work and rest in the treatment course (according to the List 2) at a healthcare institution, at patient's home and during medical evacuation (including in the field), based on the provisional clinical diagnosis, using knowledge about a human, his organs and systems, observing the relevant ethical and legal norms, by making a reasonable decision according to existing algorithms and standard procedures
PO5	Ability to determine a diet in the treatment course Determine the necessary diet in the treatment course of diseases (according to the List 2) at a healthcare institution, at patient's home and during medical evacuation (including in the field), based on the provisional clinical diagnosis, using knowledge about a human, his organs and systems and observing the relevant ethical and legal norms, by making a reasonable decision according to existing algorithms and standard procedures.

PO6	Ability to determine the principles of treatment and treatment modality Determine the treatment mode (conservative, operative) for diseases (according to the List 2) at a healthcare institution, at patient's home and during medical evacuation (including in the field), based on the provisional clinical diagnosis, using knowledge about a human, his organs and systems and observing the relevant ethical and legal norms, by making a reasonable decision according to existing algorithms and standard procedures.
PO7	Ability to diagnose medical emergencies Establish a diagnosis (according to the List 3) by making a reasonable decision based on evaluation of the person's state, using standard methods of physical examination and possible history data, the knowledge about a human, his organs and systems, and observing the relevant ethical and legal norms under any circumstances (at home, in the street, at a healthcare facility), including under emergency and military operation conditions, in the field, with a lack of information and limited time.
PO8	Skills in emergency medical procedures Provide emergency medical assistance under any circumstances, using the knowledge about a human, his organs and systems and observing the relevant ethical and legal norms, by making a reasonable decision based on the medical emergency diagnosis (according to the List 3) using standard schemes under limited time conditions.
PO9	Skills in emergency medical procedures Provide emergency medical assistance under any circumstances, using the knowledge about a human, his organs and systems and observing the relevant ethical and legal norms, by making a reasonable decision based on the medical emergency diagnosis (according to the List 3) using standard schemes under limited time conditions.
PO11	Skills in performing medical procedures Perform medical procedures (according to the List 5) at a medical facility, at home or at work by making a reasonable decision on the basis of a provisional clinical diagnosis and/or health parameters using the knowledge about a human, his organs and systems and observing the relevant ethical and legal norms.
PO15	Ability to manage the patients who are subject to dispensary monitoring Perform the following at a healthcare institution or at patient's home using the knowledge about a human, his organs and systems and observing the relevant ethical and legal norms, by making a reasonable decision based on the patient health data:
PO16	Ability to perform disability examination Detect disability and determine the degree of daily activity limitation, disability type, severity and duration as well as to maintain relevant documents at a healthcare institution on the basis of the data on disease course and professional activity of the person.
PO17	Ability to maintain medical records Perform the following at a healthcare institution or its subdivision:
PO18	Ability to conduct epidemiological and medical-statistical research of public health; ability to process governmental, social, economic, and medical information
PO19	Ability to assess the influence of environment, socio-economic and biological determinants on the health of a person, family, or population

7. Teaching and learning activities

7.1 Types of training

Topic 1. Diabetes mellitus definition. Classification, etiopathogenesis. Clinical features and diagnosis of diabetes mellitus. Diabetes mellitus type 1, 2: differentiation diagnostic, clinical assessment, investigations.

pr.tr.1 "Topic 1. Diabetes mellitus definition. Classification, etiopathogenesis. Clinical features and diagnosis of diabetes mellitus. Diabetes mellitus type 1, 2: differentiation diagnostic, clinical assessment, investigations."

Introduction to clinical endocrinology. The main mechanisms of endocrine diseases. Organization of endocrine care in Ukraine. Assessment of the initial level of knowledge. Diabetes mellitus: discussion of modern classifications, criteria for diagnosis and differential diagnosis of certain types of diabetes, etiopathogenesis, clinic. Differential diagnosis of clinical forms of obesity, classification. Metabolic syndrome. Influence of obesity on the occurrence of lesions of organs and systems of the human body. The study of this topic involves theoretical work and discussion in the classroom, solving practical problems, viewing multimedia content using virtual simulation; practice of practical skills, namely: 1. To define indications for carrying out the test of tolerance to glucose. Evaluate the results of the survey. 2. Evaluate the glycemic and glucosuric profile. 3. Determine the type of diabetes, its clinical course, and the state of compensation. 4. Determine the urine glucose and acetone level by an express method. Determine the level of glucose in the blood by an express method. 5. Determine the degree of obesity and BMI.

Topic 2. Chronic complications of diabetes mellitus: classification and diagnostic criteria, management.

lect.1 "Chronic complications of diabetes mellitus: classification and diagnostic criteria, management."

angiopathy of the lower extremities. Diabetic polyneuropathy: classification, etiopathogenesis, clinical manifestations, types of autonomic diabetic neuropathy. Diabetic foot syndrome. Cerebrovascular and cardiovascular diabetic macroangiopathy.

pr.tr.2 "Chronic complications of diabetes mellitus: classification and diagnostic criteria, management."

Pathophysiology of development, definition, and classification of diabetic macro- and microangiopathies. Diabetic retinopathy, nephropathy, diabetic angiopathy of the lower extremities: stages of development, diagnosis, prevention, classification. Diabetic polyneuropathy: classification, etiopathogenesis, clinical manifestations, types of autonomic diabetic neuropathy. Diabetic foot syndrome: diff. diagnosis of neuropathic and ischemic forms of foot lesions, classification. Cerebrovascular and cardiovascular diabetic macroangiopathy. The study of this topic involves theoretical discussion and practical solutions to problems with the analysis of additional laboratory and instrumental research methods, the use of role situations, case-study, medical theater, elements of augmented reality, interactive testing.

Topic 3. The main principles of type 1 diabetes mellitus therapy. Insulin therapy. Insulin's Classification. Regimens of insulin therapy. Complications of insulin therapy.

pr.tr.3 "The main principles of type 1 diabetes mellitus therapy."

Modern methods of treatment of type 1 diabetes mellitus: indications for insulin therapy, administration of insulin for newly diagnosed diabetes, insulin therapy regimens, complications of insulin therapy. Diet therapy. Glycemic index of food. Theoretical discussion, analysis of patients, case study, use of augmented reality. The practice of practical skills: 1. To appoint dietary treatment to the patient with diabetes. 2. Know oral hypoglycemic drugs and be able to prescribe them. 3. To determine secondary sulfanilamide resistance, to be able to treat it. 4. To appoint a mode of insulin therapy to the patient with diabetes. 5. Be able to use a syringe pen. 6. Develop a plan of self-control for diabetics.

Topic 4. Management of type 2 diabetes mellitus. The diet. The oral hypoglycemic agents. Criteria of compensation.

pr.tr.4 "Management of type 2 diabetes mellitus."

Modern methods of treatment of type 2 diabetes mellitus: oral hypoglycemic agents: sulfonamides (classification, mechanism of hypoglycemic effect, rules of administration, side effects of drugs). Features of hypoglycemic conditions caused by sulfonamides. Biguanides (indications and contraindications for use, side effects), thiazolidinediones, postprandial stimulators of insulin secretion, alpha-glucosidase inhibitors, incretin mimetics (analogs of glucagon-like peptide 1 (GPP-1), long-acting inhibitors of sodium-dependent cotransporter of glucose-2. Indications for insulin therapy, insulin therapy regimens, complications. Diet therapy. Theoretical discussion, analysis of patients, case study, use of augmented reality. The practice of practical skills: 1. To appoint dietary treatment to the patient with diabetes. 2. Know oral hypoglycemic drugs and be able to prescribe them. 3. To determine secondary sulfanilamide resistance, to be able to treat it. 4. To appoint a mode of insulin therapy to the patient with diabetes. 5. Be able to use a syringe pen. 6. Develop a plan of self-control for diabetics.

Topic 5. Emergencies in patients with diabetes. Diabetic coma pathogenesis, diagnosis and treatment. Acute states management.

lect.2 "The main principles of type 1 and type 2 diabetes mellitus therapy. Emergencies in patients with diabetes. Diabetic coma pathogenesis, diagnosis and treatment. Acute states management."

Emergencies in patients with diabetes, clinic, diagnosis, prevention, emergency care. Modern methods of treatment of type 2 diabetes mellitus: oral hypoglycemic agents: sulfonamides (classification, mechanism of hypoglycemic effect, rules of administration, side effects of drugs). Features of hypoglycemic conditions caused by sulfonamides. Biguanides (indications and contraindications for use, side effects), thiazolidinediones, postprandial stimulators of insulin secretion, alpha-glucosidase inhibitors, incretinomimetics (analogues of glucagon-like peptide 1 (GPP-1), long-acting inhibitors of sodium-dependent cotransporter of glucose-2. Modern methods of treatment of type 1 diabetes mellitus: indications for insulin therapy, administration of insulin for newly diagnosed diabetes, insulin therapy regimens, complications. Emergencies in patients with diabetes. Teaching is conducted in the form of multimedia lectures (in the presence of quarantine - on-line).

pr.tr.5 "Topic 5. Emergencies in patients with diabetes. Diabetic coma pathogenesis, diagnosis and treatment. Acute states management."

Emergencies in patients with diabetes. Diabetic coma pathogenesis, diagnosis, and treatment. Acute states management. Emergencies in patients with diabetes, clinic, diagnosis, prevention, emergency care. Causes of decompensation of diabetes. Diabetic ketonuria, ketoacidosis, diabetic coma: diagnosis, treatment. Hyperosmolar coma, lactic acid coma, hypoglycemic coma: conditions of origin, pathogenesis, features of the clinical course, treatment. Differential diagnosis. The study of this topic involves theoretical discussion in the classroom, the practice of emergency skills in the simulation center, the use of virtual simulation, testing.

Topic 6. Thyroid disease. Iodine deficiency conditions. Dysfunction of the thyroid gland. Goiter diagnostic criteria. Clinical assessment, investigations and management. Iodine prevention.

lect.3 "Thyroid disease. Iodine deficiency conditions. Dysfunction of the thyroid gland. Goiter diagnostic criteria. Iodine prevention."

Definition of goiter. Laboratory and instrumental methods of examination of the thyroid gland. Indications, contraindications to use, the diagnostic value of each method. Signs of endemic terrain according to the WHO. Methods of iodine prophylaxis. Influence of technogenic pollutants on the development of thyroid pathology. Hypothyroidism. Classification, diagnosis, clinic, treatment. Definition and classification of thyroiditis, etiopathogenesis, differential diagnosis, treatment. Nodes in the thyroid gland: etiology, clinic, classification, differential diagnosis of malignant and benign tumors. Diagnosis, differential diagnosis, prevention, and treatment of thyrotoxicosis syndrome. Classifications of thyrotoxicosis (depending on the localization of the pathological factor (primary, secondary, tertiary), pathogenetic, clinical). Diffuse toxic goiter: etiopathogenesis, diagnosis, treatment. Teaching is conducted in the form of multimedia lectures (in the presence of quarantine - online).

pr.tr.6 "Thyroid disease. Iodine deficiency conditions. Dysfunction of the thyroid gland. Goiter diagnostic criteria. Clinical assessment, investigations and management. Iodine prevention."

Anatomical and physiological data on the thyroid gland. Definition of goiter. The reasons for the increase in the size of the thyroid gland. Laboratory and instrumental methods of examination of the thyroid gland. Indications, contraindications to use, the diagnostic value of each method. Signs of endemic terrain according to the WHO. Methods of iodine prophylaxis. Influence of technogenic pollutants on the development of thyroid pathology. The study of this topic involves theoretical discussion and practical solutions to problems with the analysis of additional laboratory and instrumental research methods, the use of role situations, case-study, medical theater, testing, practical skills: 1. Determine the degree of goiter. 2. Evaluate the data of ultrasound examination and Doppler of the thyroid gland. 3. Evaluate the results of radioisotope examination of the thyroid gland. 4. Assess the condition of the thyroid system according to radioimmunological and enzyme-linked immunosorbent assays, evaluate ECG results.

Topic 7. Hypothyroidism. Thyroiditis. Nodular goiter. Thyroid cancer.

pr.tr.7 "Hypothyroidism. Thyroiditis. Nodular goiter. Thyroid cancer."

Hypothyroidism. Classification, diagnosis, clinic, treatment. Definition and classification of thyroiditis, etiopathogenesis, differential diagnosis, treatment. Nodes in the thyroid gland: etiology, clinic, classification, differential diagnosis of malignant and benign tumors. Indications and contraindications to surgical treatment of thyroid disease. The study of this topic involves theoretical discussion and practical solutions to problems with the analysis of additional laboratory and instrumental research methods, the use of role situations, case-study, medical theater, testing, practical skills: 1. Determine the degree of goiter. 2. Evaluate the data of ultrasound examination and Doppler of the thyroid gland. 3. Evaluate the results of radioisotope examination of the thyroid gland. 4. Assess the condition of the thyroid system according to radioimmunological and enzyme-linked immunosorbent assays, evaluate ECG results. 5. Prescribe treatment to a patient with hypothyroidism. 6. Detection of signs of thyroid cancer

Topic 8. Thyrotoxicosis. Diffuse toxic goiter.

pr.tr.8 "Thyrotoxicosis. Diffuse toxic goiter."

Diagnosis, differential diagnosis, prevention, and treatment of thyrotoxicosis syndrome. Classifications of thyrotoxicosis (depending on the localization of the pathological factor (primary, secondary, tertiary), pathogenetic, clinical). The study of this topic involves theoretical discussion and practical solutions with the analysis of additional laboratory and instrumental research methods, use of role situations, case-study, testing of emergencies on phantoms, simulation center, acquisition of practical skills: 1. Prescribe treatment to patients with toxic goiter. 2. Diagnose thyrotoxicosis. Metabolic osteopathy of endocrine origin.

Topic 9. Thyrotoxic crisis. Diseases of the thyroid gland: hyper-and hypoparathyroidism.

pr.tr.7 "Thyrotoxic crisis. Diseases of the thyroid gland: hyper-and hypoparathyroidism."

Thyrotoxic crisis: diagnosis, clinic, treatment. Anatomical and physiological features of the parathyroid glands, their role in the regulation of calcium homeostasis. Hyperthyroidism, hypoparathyroidism: classification criteria, clinic, treatment. Metabolic osteopathy in endocrine diseases. Etiology and pathogenesis, differential diagnosis, treatment, and prevention. The study of this topic involves theoretical discussion and practical solutions with the analysis of additional laboratory and instrumental research methods, use of role situations, case-study, testing of emergencies on phantoms simulation center, acquisition of practical skills: 1. Prescribe treatment of thyrotoxic crisis. 2. Diagnose hypoparathyroidism. Metabolic osteopathy of endocrine origin. 3. Diagnose hyperparathyroidism.

Topic 10. The adrenal glands diseases: acute and chronic adrenal insufficiency, hormonally active tumors

pr.tr.9 "The adrenal glands diseases: acute and chronic adrenal insufficiency, hormonally active tumors"

Anatomical features of the adrenal glands, hormones of each layer of the adrenal cortex. Physiological action of adrenal hormones. Classification of chronic adrenal insufficiency, causes, clinical manifestations, diagnosis, principles of replacement therapy. Acute adrenal insufficiency (Addison's crisis, Waterhouse-Friedrichsen syndrome). Etiology, clinical manifestations, diagnosis, emergency care. Classification of hormonally active tumors of the cortical layer of the adrenal glands. Classification of Hypercorticism. Surgical treatment of adrenal tumors, preoperative preparation, postoperative period, rehabilitation of patients after adrenalectomy. The study of this topic involves theoretical discussion in the classroom, the practice of emergency skills in the simulation center, the use of virtual simulation, testing, the practice of practical skills: 1. Assess the condition of the adrenal glands according to clinical data, hormonal tests, ultrasound, arteriography tomography, MRI. 2. Prescribe treatment for Addison's crisis.

Topic 11. Diseases of the hypothalamic-pituitary system

pr.tr.11 "Diseases of the hypothalamic-pituitary system"

The concept of hormones activity. Classification of hormones by chemical structure. The main functions of hormones, their genomic and extragenomic effects. Hormone synthesis, secretion, blood transport, and metabolism. Mechanisms of action of hormones. Regulation of endocrine functions. Anatomical and physiological data on the pituitary gland and hypothalamus. Classification of hypothalamic-pituitary diseases. Hyperprolactinemia syndrome, hypopituitarism, acromegaly, diabetes mellitus, prolactinoma. Etiology, pathogenesis, clinic, diagnosis, treatment. Pathology of growth and sexual development in children.

Topic 12. Curation. Preparing to write a medical history

pr.tr.12 "Curation. Preparing to write a medical history"

Curation. Preparing to write a medical historyIndependent supervision of an endocrine patient. Preparing to write a medical history. In the absence of quarantine restrictions during the curation, the student is provided with a patient with endocrine pathology who is being treated in the endocrine departments of the medical institution. The student independently, but under the guidance of the teacher, conducts a clinical examination and interpretation of the results of examinations given in the medical history. The rules of writing and registration of medical history are regulated by the relevant regulations, which are set out in the guidelines of the department for writing educational medical history. In the presence of quarantine, the student is provided with a virtual patient.

Topic 13. Diseases of the gonads. Hypogonadism.

pr.tr.13 "Diseases of the gonads. Hypogonadism."

Hypogonadism. Morphological structure of the endocrine part of the testis and ovary. Physiological effects of sex hormones. Classification of puberty disorders. Climax. A pathological course of menopause. Clinical manifestations in women and men. Treatment of pathological manifestations of menopause. Autoimmune polyglandular syndrome. Syndrome of multiple endocrine neoplasias. Theoretical discussion in the classroom, reports, and presentations, the practice of practical skills: 1. Be able to evaluate the craniogram and CT data, MRI of the skull. 2. Determine the type of physique. 3. Determine the degree of somatosexual development. 4. Determine the "bone age" according to radiography. 5. Evaluate the data of chromosomal analysis. 6. Identify types of violations of sexual differentiation. 7. Diagnose menopausal syndrome and prescribe treatment for pathological menopause

Topic 14. Defense of medical history.

pr.tr.12 "Defense of medical history."

Defense of medical history includes the peculiarities of history taking, methods of examination, semiotics of lesions of the endocrine system, formulation and justification of diagnoses, providing recommendations to the patient, which was provided to the student for supervision.

Topic 15. Module control

pr.tr.15 "Module control"

The module control includes written and oral answers to questions for the entire course of endocrinology, demonstration of acquired practical skills according to the list. Tickets contain 3 theoretical questions and cover all sections of the discipline (15 points each), 1 practical task (15 points), and the issue of emergency care (20 points).

7.2 Learning activities

LA1	Writing a medical history
LA2	Discussion of cases
LA3	Preparation for practical classes
LA4	Preparation of multimedia presentations
LA5	Watching movies
LA6	E-learning in systems (Zoom, Meet, MIX.sumdu.edu.ua)
LA7	Practice of practical skills in the simulation center
LA8	Individual research project

8. Teaching methods

Course involves learning through:

TM1	Interactive lectures
TM2	Analysis of specific situations. (Case-study)
TM3	Business games
TM4	Case method

TM5	Round Table
TM6	Lectures-discussions
TM7	Demonstration method
TM8	Educational discussion / debate
TM9	Think-pair-share
TM10	Role play

The discipline is taught using modern teaching methods (CBL, TBL, RBL), which not only promote the development of professional skills but also stimulate creative and scientific activities and are aimed at training practice-oriented professionals: lectures-visualizations, problem lectures, seminars, practical demonstrations. Participation in group work. • Participation in discussions (debates, negotiations). • Participation in role-playing games. • Preparation of a written presentation (essay, report, reflective diary, etc.). • Participate in a public presentation with a video of what is happening. • Observation or demonstration of real professional skills. • Group work (collective discussion of the selected problem and search for its solution). • Participation in competitions, Olympiads, scientific symposia, etc. • Critical analysis of the situation. • Critical evaluation of the literature. • Preparation of the message/speech (fixes the problem and ways to solve it)

The discipline provides students with the following soft skills: LC 1. Ability to abstract thinking, analysis, and synthesis. LC 2. Ability to learn, master modern knowledge and apply them in practical situations. CL 3. Knowledge and understanding of the subject industry and understanding of the professional activity. LC 4. Ability to adapt and act in a new situation. LC 5. Ability to make informed decisions; work in a team; skills interpersonal interaction. LC 7. Ability to use information and communication technologies of the LC 8. Definiteness and persistence in relation to the set tasks and responsibilities.

9. Methods and criteria for assessment

9.1. Assessment criteria

ECTS	Definition	National scale	Rating scale
A	Outstanding performance without errors	5 (Excellent)	$90 \leq RD \leq 100$
B	Above the average standard but with minor errors	4 (Good)	$82 \leq RD < 89$
C	Generally sound work with some errors	4 (Good)	$74 \leq RD < 81$
D	Fair but with significant shortcomings	3 (Satisfactory)	$64 \leq RD < 73$
E	Performance meets the minimum criteria	3 (Satisfactory)	$60 \leq RD < 63$
FX	Fail – some more work required before the credit can be awarded	2 (Fail)	$35 \leq RD < 59$
F	Fail – considerable further work is required	2 (Fail)	$0 \leq RD < 34$

9.2 Formative assessment

FA1	Express testing
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FA2	Defence of medical history
FA3	Protection of presentations and abstracts. Defense of an individual research project (speech at a conference, competition of scientific works)
FA4	Interviews and oral comments of the teacher on his results
FA5	Discussion and self-correction of the work done by students
FA6	Checking and evaluating written assignments
FA7	Solving clinical cases

9.3 Summative assessment

SA1	Evaluation of written works, surveys, solving a clinical case
SA2	Protection of medical history
SA3	Testing
SA4	Final control
SA5	Defense of an individual research project (incentive activities, additional points)

Form of assessment:

7 semester		200 scores
SA1. Evaluation of written works, surveys, solving a clinical case		100
		100
SA2. Protection of medical history		10
		10
SA3. Testing		10
		10
SA4. Final control		80
		80

Form of assessment (special cases):

7 semester		200 scores
SA1. Evaluation of written works, surveys, solving a clinical case		100
	In case of quarantine restrictions, practical classes are held remotely using the platform Mix.sumdu.edu.ua, Google meet.	100
SA2. Protection of medical history		10
	In case of quarantine restrictions, the defence of the medical history is carried out remotely using the platform Mix.sumdu.edu.ua, Zoom, Google meet.	10
SA3. Testing		10

	In case of quarantine restrictions, testing is performed remotely using the Mix.sumdu.edu.ua platform.	10
SA4. Final control		80
	In case of quarantine restrictions, the test is carried out remotely using the platform Mix.sumdu.edu.ua, Zoom, Google meet.	80

When mastering the materials of the module, the student is assigned a maximum of 5 points for each practical lesson (the grade is set in the traditional 4-point grading system). At the end of the academic year, the arithmetic mean of student performance is calculated. The maximum number of points that a student can receive in practical classes during the academic year - 100. The number of points of the student is calculated by the formula: 100 multiplied on the arithmetic mean and divide by 5. The following points are awarded for writing a medical history: "5" - 5 points, "4" - 4 points, "3" - 3 points, "2" - 0 points. Protection of medical history: "5" - 5 points, "4" - 4 points, "3" - 3 points, "2" - 0 points. In general, for the history of the disease the student can get a maximum of 10 points, the minimum required score of 6. For testing, the student receives a maximum of 10 points. The minimum number of points that a student must receive is 6 points. The maximum number of points for the current educational activities of the student - 120. The student is admitted to a differentiated test if he meets the requirements of the curriculum and if for the current educational activity he scored at least 72 points: 60 points during practical classes, 6 points for medical history, 6 points for testing. The tickets contain 3 theoretical questions on various topics and cover all sections of the discipline (15 points each), 1 practical task (15 points), and the issue of emergency care (20 points). The credit is credited to the student if he scored at least 48 points out of 80. Incentive points are added to the assessment of the discipline for the implementation of an individual research project (defense of student research - 12 points, presentation at the conference - 5 points, poster presentation at the conference - 4 points, abstracts - 3 points). The total score in the discipline may not exceed 200 points

10. Learning resources

10.1 Material and technical support

MTS1	Information and communication systems
MTS2	Library funds
MTS3	Computers, computer systems and networks
MTS4	Simulation center for testing emergency care.
MTS5	Medical facilities / premises and equipment (clinics, hospitals, etc.)
MTS6	Multimedia, video and sound reproduction, projection equipment (video cameras, projectors, screens, smart boards, etc.)
MTS7	Software (to support distance learning, online surveys, virtual laboratories, virtual patients, to create computer graphics, modeling, etc.)
MTS8	Medical equipment (glucometer, graduated tuning fork, microfilament, type therm, pulse oximeter, training syringe pens, pumps, height meter, scales, tonometer, phonendoscope, etc.)

10.2 Information and methodical support

Essential Reading	
1	Endocrinology: Textbook (Ed. by prof. Petro M. Bodnar. – 4th ed. – Vinnytsia: Нова Книга, 2017. – 328 pp.
2	Melekhovets, O. K. Diabetes Mellitus Management. Practical Guide with Elements of Augmented Reality: study guide / O. K. Melekhovets. — Sumy: Sumy State University, 2020. — 120 p.
Supplemental Reading	
3	Harrison's Endocrinology. Ed. by J. Larry Jameson, Mc Graw – Hill., New York, Chicago, Toronto. e.a. 4rd edition, 2020. - 609 p.
4	Methodological instructions for the practical course "Endocrinology": for the foreign students of the specialty 222 "Medicine" of the full-time course of study / N. V. Demikhova. — Електронне видання — Sumy : Sumy State University, 2016. — 208 p.
Web-based and electronic resources	
5	Endocrine and Neuroendocrine Surgery [Електронний ресурс] / edited by James R. Howe. — 1st ed. 2017. — Berlin, Heidelberg : Springer Berlin Heidelberg, 2017. — XII, 344 p.