

MINISTRY OF HEALTH OF UKRAINE
ODESA NATIONAL MEDICAL UNIVERSITY

Department of Ophthalmology

CONFIRMED by



Vice-rector for scientific and pedagogical work

Eduard BURIACHKIVSKYI

« 01 » 09 2023

WORKING PROGRAM OF THE ELECTIVE COMPONENT

«OPHTHALMOLOGY IN THE PRACTICE OF THE FAMILY DOCTOR»

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

Field of knowledge: 22 «Health care»

Specialty: 222 «Medicine»

Educational and professional program: Medicine

2023

The program was compiled by the staff of the Department of Ophthalmology of Odesa National Medical University: the Head of the department, Doctor of Medicine, Professor **Venger L.V.**, Doctor of Medicine, Professor and Doctor of Medicine **N.V. Konovalova**, Associate Professor **Yepisheva S.M.**

The working program is approved at the meeting of the Department of Ophthalmology

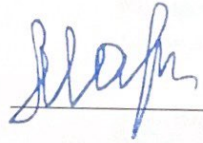
Protocol № 1 dated "29" 08 2023

Head of Department



Liudmyla VENGER

Approved by the guarantor of
the educational and professional program

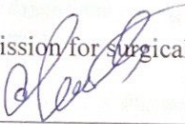


Valeriia MARICHEREDA

Approved by the subject-cycle methodological commission for surgical disciplines of ONMedU

Protocol № 1 dated "30" 08 2023

Head of the subject-cycle methodological commission for surgical disciplines



Vasyl MISHCHENKO

Revised and approved at the department meeting _____

Protocol № ___ dated "___" _____ 20__ y.

Head of Department

(_____)

(signature)

(First Name Last Name)

Revised and approved at the department meeting _____

Protocol № ___ dated "___" _____ 20__ y.

Head of Department

(_____)

(signature)

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1. Description of the academic discipline

Name of indicators	Field of knowledge, specialty, specialization, level of higher education	Characteristics of the academic discipline
Total number:	Field of knowledge 22 «Health care»	<i>Full-time education</i> <i>Compulsory discipline</i>
Credits of ECTS: 3	Specialty 222 «Medicine»	<i>A year of training 6</i>
Hours: 90		<i>Semester XI -XII</i>
Content modules: 1	Level of higher education second (master's degree)	<i>Lectures (hours) 0</i>
		<i>Seminars (hours) 0</i>
		<i>Practical classes (hours) 30</i>
		<i>Laboratories (hours) 0</i>
		<i>Independent work (hours) 60</i> <i>including individual tasks (0 hours)</i>
		<i>The form of the final control</i> <i>differential exam</i>

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

The purpose of teaching the academic discipline is the acquisition of knowledge and the formation of elements of professional competences in the field of ophthalmology by the student of higher education, namely practical skills of researching the organ of vision and improving the skills and competences acquired during the study of previous disciplines.

The tasks of the discipline are the following:

1. Acquisition and deepening of a set of knowledge, abilities, skills and other competencies sufficient for solving complex tasks in ophthalmology;
2. Practice the skills and abilities of analyzing the results of ophthalmological research;
3. Acquisition of theoretical knowledge and practical skills regarding ophthalmological symptoms and emergency conditions in ophthalmology.
4. Acquisition of theoretical knowledge and practical skills regarding the peculiarities of observation, diagnosis and management of such patients.

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

Integral competencies: (IC): The ability to solve typical and complex problems, including those of a research and innovation nature in the field of medicine. Ability to continue learning with a high degree of autonomy.

– **General competencies: (GC):**

GC1 – Ability to abstract thinking, analysis and synthesis.

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 reasonable decisions.

GC7 – Ability to work in a team.

GC8 – Ability to interpersonal interaction.

GC10 – Ability to use information and communication technologies

GC11 – Ability to search, process and analyze information from various sources.
GC12 – Determination and persistence in relation to assigned tasks and assumed responsibilities.
GC 13. Awareness of equal opportunities and gender issues
GC 15. Ability to preserve and increase 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 GC 16. Ability to evaluate and ensure the quality of the work performed.

– **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.

SC6 – Ability to determine the principles and nature of treatment and prevention of diseases.

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.

SC 17 Ability to assess the impact of the environment, socioeconomic and biological determinants on the state of health of an individual, family, population

SC24 – Adherence to ethical principles when working with patients and laboratory animals.

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 basic and clinical biomedical sciences, at a level sufficient for solving professional tasks in the field of health care.

PLO3 – Specialized conceptual knowledge that 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.

PLO5 - Collecting complaints, history of life and diseases, assessing 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, evaluation of the information regarding the diagnosis (according to list 4), taking into account the age of the patient.

PLO 21. Searching for the necessary information in the professional literature and databases of other sources, analysing, evaluating and application of this information.

As a result of studying the discipline, the student has to:

– **Know:**

- rules for determining the functions of peripheral and central vision;
- physiology of binocular vision, research methods, basics of diagnosis, treatment of strabismus (various types);
- diseases of the conjunctiva (clinic, diagnosis, differential diagnosis, treatment); clinic, diagnosis, differential diagnosis, examination, treatment of corneal diseases;
- clinic, diagnosis, differential diagnosis, examination, treatment of diseases of the anterior and posterior segments of the vascular tract;
- clinic, diagnosis, differential diagnosis, treatment of the main diseases of the retina;
- the main forms of optic nerve disease;
- clinic, methods of diagnosis and treatment of diseases of the orbit;

- professional eye diseases, complex measures for dispensation of patients, prevention and medical examination.
- **Be able:**
 - collect anamnesis of the ophthalmological patient
 - examine central and peripheral vision
 - perform direct and reverse ophthalmoscopy
 - determine intraocular pressure by palpation
 - determine the sensitivity of the ciliary body
 - to conduct research using the method of lateral illumination
 - to conduct research in passing light
 - determine the mobility of the eyeball
 - determine the presence of strabismus
 - analyze the results of the patient's ophthalmological examination.
 - determine etiological, pathogenetic factors and clinical manifestations, diagnose an emergency and provide emergency assistance to the victim in the conditions of natural and man-made disasters.
 - to provide first aid in emergency situations in ophthalmology

3. The content of the educational discipline

Topic 1. Methods of examination in ophthalmology. Examination of visual functions (central vision, peripheral vision, binocular vision, color perception).

Basic diagnostic methods. Blindness. The concept of norm and pathology of the organ of vision.

The main causes of vision loss in people of different ages and sexes.

Blindness. Characteristics of absolute, object and everyday, professional blindness. The most common diseases that lead to blindness in people of all ages. Differences in the causes of blindness in children and adults.

Visual sensory system (visual analyzer, its main and auxiliary structures). Main structures (light-receiving and analyzing apparatus, photoreceptors and retinal neurons, optic nerves, external geniculate bodies, visual areas of the cortex). Auxiliary structures (oculomotor apparatus and light-conducting apparatus).

The main elements of the visual act: light perception, peripheral vision, form vision, binocular vision.

Study of central vision. Visual acuity, its measurement unit, visual angle. The value of the minimum viewing angle. The principle of building tables for measuring visual acuity.

Determination of visual acuity using tables. The role of the optical system of the eye.

Color vision research. Color and its main features. Conditions necessary for color recognition. Trichromasia of the normal human eye. Dichromasia. Explanation of mistakes made by dichromate. Diagnosis of color blindness. Polychromatic tables.

Study of peripheral vision - field of vision. Normal limits of the field of vision, physiological scotoma. Methods of determining the field of vision: control, perimetry, campimetry. Concentric narrowing of the field of vision. Sector-like defects, half loss of the field of vision of both eyes (hemianopsia), limited defects in the field of vision (scotoma). Types of scotoma (central, peripheral, relative, absolute, negative, positive).

A study of twilight vision. Hemeralopia is symptomatic and essential.

Optical coherence tomography of the retina. Fluorescent angiography. Conducting method. Evaluation of the choroidal, arterial and venous phase.

Topic 2. Refraction, accommodation. Methods of examination. Age changes and peculiarities of examination. Strabismus.

The doctrine of refraction. The optical system of the eye, its constituent parts. The unit of measurement of refraction is the diopter. The concept of physical refraction of the eye and the age-related dynamics of its development. Objective and subjective methods of determining clinical refraction. Dependence of clinical refraction on the refractive power of optical media and the length of the eye axis. Characteristics of clinical refraction and its varieties: emmetropia, myopia, hypermetropia. Astigmatism. Research methods. The concept of commensurate and incommensurate clinical refraction (emmetropia, ametropia, anisometropia). Age characteristic and specific weight of different types of refraction.

Emmetropia, its clinical characteristics, distribution, methods of determination.

Hypermetropia (farsightedness). Age dynamics, distribution. Features of optical correction of hypermetropia.

Myopia (short-sightedness). Characteristics, age dynamics and distribution. Congenital and progressive myopia. Changes in the membranes of the eye during progressive myopia. Pathogenesis, classification, role of unfavorable factors. Principles of medical and surgical treatment. Prevention. Optimal ocular correction, contact correction, refractive surgery using excimer laser.

Astigmatism. Characteristics, distribution, age dynamics. Types of astigmatism, methods of its determination. Features of glasses used to correct astigmatism. Contact lenses.

Accommodation. Convergence. Age-related changes in accommodation. Spasm and paralysis of accommodation, their causes. Diagnosis of spasms of accommodation and their prevention. Visual fatigue (asthenopia) and methods of its treatment. Presbyopia and its correction depending on the initial clinical refraction and age. Hygiene of visual work in childhood and old age.

Examination of binocular vision. Binocular vision and its essence. Scheme of operation of oculomotor muscles. Methods of determining binocular vision: establishing movement, test with two pencils, examination with a "hole in the palm". Violation of binocular vision.

Changes of the oculomotor apparatus that occur most often. Disorder of depth (binocular) vision. Imaginary and hidden strabismus. Associated and paralytic strabismus. Principles of treatment of conjugal and paralytic strabismus. Prevention of strabismus.

Topic 3. Methods of research of the accessory apparatus of the organ of vision. Blepharitis. Barley. Chalazion. Diagnosis of dacryocystitis, dacryoadenitis, demodex. Methods of prevention and treatment.

Blepharitis, stye, chalazion, abscess, eyelid phlegmon. Ptosis, lagophthalmos. Congenital anomalies (coloboma of the eyelids, ankyloblepharon, vertigo, inversion of the eyelids, epicanthus, ptosis). Eyelid diseases caused by demodicosis (features of the clinical picture, diagnosis, treatment and prevention).

Dacryoadenitis. Etiology, clinic, diagnostic methods, course, complications. Principles of treatment. Sjögren's syndrome ("dry" eye syndrome during damage to the lacrimal and other exocrine glands). Pathogenesis, stages of the clinical course, consequences. Methods of diagnosis and therapy. The role of the general practitioner in the timely diagnosis and comprehensive treatment of Sjögren's syndrome. Neoplasm of the lacrimal gland (adenocarcinoma). Clinic, course, diagnostic methods, treatment, prognosis.

Dacryocystitis of newborns. Clinical signs, causes and time of appearance. Methods of diagnosis and treatment, possible complications.

Chronic dacryocystitis. Clinic, causes, course, complications. Methods of operative treatment. Prevention.

Acute dacryocystitis (phlegmon of the lacrimal bladder). Clinic, course, consequences. Principles of treatment and prevention.

Inflammatory diseases of the orbit: phlegmon of the orbit, thrombosis of the cavernous sinus, associated with diseases of the maxillofacial system (acute and chronic periodontitis, basal granuloma, osteomyelitis of the jaws, phlegmons and abscesses of the maxillofacial area and neck, furuncles or carbuncles of the face, facial erysipelas).

Ways of spread of infection in the orbit (via venous and lymphatic vessels, hematogenous-metastatic way). General symptomatology typical for the inflammatory process in the orbit.

Methods of diagnosis of inflammatory diseases of the orbit, clinic and course.

Topic 4. Conjunctivitis. Differential diagnosis of conjunctivitis. Methods of treatment. Dry eye syndrome, diagnosis, prevention, treatment.

Conjunctivitis. Acute conjunctivitis, complaints, discharge, appearance of the conjunctiva, conjunctival injection of the eyeball and the difference from pericorneal. Etiology. Methods of treatment. Epidemic conjunctivitis caused by Koch-Wicks bacillus. Measures of mass prevention, sanitary and hygienic measures. Features of diagnosis of acute conjunctivitis (diplobacillary, pneumococcal, diphtheria) and treatment.

Honoblenorrhoea of newborns and adults. Its prevention and treatment. Effects. General and local treatment.

Viral conjunctivitis (herpesvirus, adenovirus). Features of diagnosis and treatment. Measles and smallpox conjunctivitis: diagnosis, clinical course, treatment and prevention.

Chronic conjunctivitis. The need to identify and eliminate chronically acting factors. Chronic conjunctivitis as an occupational pathology and preventive measures in industry and agriculture. Trachoma. Definition. Etiology. Pathogenesis. Four stages of trachoma development. Effects. Complication. Paratrachoma. Etiology. Pathogenesis, features of diagnosis and treatment.

Dystrophic changes of the conjunctiva (pterygium, pingvecula). Indications for surgical treatment.

Topic 5. Keratitis Methods of diagnosis, modern approaches to treatment, complications of keratitis.

Keratitis of exogenous origin. Infectious keratitis of bacterial origin. Corneal ulcer. Conditions for the occurrence of an ulcerative process in the cornea. Creeping corneal ulcer. Clinic, course, consequences. The role of chronic dacryocystitis. Treatment. Prevention: dacryocystorhinostomy, worker's eye protection.

Keratitis of viral etiology. Adenovirus keratoconjunctivitis. Clinic. Course. Treatment is local and general. Epidemiology. Prevention. Keratitis caused by diseases of the conjunctiva, eyelids and meibomian (tarsal) glands. Treatment. Prevention.

Keratitis of endogenous origin. Infectious keratitis. Keratitis in congenital syphilis (parenchymal). Clinic. Cyclical course. Effects. Causes of occurrence. Treatment.

Tuberculous keratitis. Hematogenous tuberculous keratitis. Pathogenesis. Clinic.

Tuberculous-allergic keratitis. Clinic and course. General condition of the child's body. Treatment. Prevention of tubercular lesions of the eye.

Neuroparalytic keratitis during trigeminal nerve damage. The features of the clinic are lack of sensitivity, areactivity of the eye. Herpetic keratitis. Clinic of various forms. Course. Effects. Treatment.

Fungal lesions of the cornea. Clinic, course, diagnostic features. Specific methods of treatment.

Avitaminosis keratitis. Damage to the cornea in vitamin deficiency A. Prexerosis. Xerosis of the cornea. Keratomalacia. Clinic. Course. Treatment. Prevention.

Corneal dystrophies. Causes, features of the clinic and treatment.

Topic 6. Uveitis. Etiology, features of diagnosis and treatment, prevention of relapses.

The structure of vascular membrane diseases: inflammatory and dystrophic processes, neoplasms, congenital anomalies.

Inflammation of the vascular tract (uveitis). The most common causes of uveitis in people of different ages. Pathogenetic mechanisms of development of uveitis: infectious-metastatic and toxic-allergic. Classification of uveitis according to course, localization, clinical and morphological picture, etiology, immunological status. The main morphological, functional signs and mechanisms of uveitis (iridocyclitis, choroiditis, panuveitis). Organization, principles, methods of general and local treatment of anterior and posterior uveitis depending on the etiology and nature of the process. Effects. Prevention.

Dystrophic diseases of the iris and ciliary body. Causes of occurrence..

Anomalies of the development of the choroid (coloboma of the iris, coloboma of the ciliary body, coloboma of the choroid, aniridia, polycoria, chorioidermia, albinism, residual pupillary membrane).

Neoplasm of the vascular membrane. Benign tumors (cysts, nevi, neurofibromas, neurinomas, leiomyomas). Malignant tumors (melanoma, melanosa). Tactics of a general practitioner.

Etiology, pathogenesis of diseases of the sclera (scleritis, episcleritis, ectasia, scleral staphyloma, scleromalacia). Diagnostics and modern methods of treatment.

Topic 7. Age-related changes of the lens. Cataracts. Research methods. Treatment. Complications.

Congenital and acquired cataract (senile, secondary, complicated, traumatic), its development, pathogenesis, classification. Methods of treatment.

Aphakia, methods of correction.

Congenital cataract (clinic, diagnosis, treatment). Anomalies of lens development.

Congenital pathology of the vitreous body (primary hyperplasia, remnants of the hyaloid artery). Diagnosis, treatment. Acquired pathology of the vitreous body (hemorrhage, destruction). Diagnostics, modern methods of treatment.

Features of modern ophthalmic surgery. Requirements for ophthalmic surgical equipment, instruments and suture material. Types of eye implants. Indications for planned and urgent surgical interventions.

Curation of a patient with ophthalmopathology.

Topic 8. Methods of examination of intraocular pressure. Ophthalmohypertension. Glaucoma. Dispensary observation. Treatment.

Classification. Open-angle and closed-angle glaucoma (diagnosis, clinical course). Acute attack of glaucoma. Differential diagnosis with acute iritis. Treatment is urgent: conservative general and local. Indications and terms of surgical treatment.

Differential diagnosis of primary open-angle glaucoma with initial senile cataract. Course. Treatment: regimen of instillation of hypotensive drops, indications for surgical and laser treatment, principles of surgical treatment. Regimen of a glaucoma patient. Dispensary.

Congenital glaucoma (etiology, pathogenesis), clinical features and treatment.

Secondary glaucoma, clinical forms, principles of diagnosis and treatment.

Blindness due to glaucoma. Prevention, methods of early diagnosis of glaucoma.

Topic 9. Damage of the organ of vision. Diagnostic. First aid. Tactics of further treatment.

Classification of eye injuries. Contusions of the organ of vision.

Contusion of the eyelids. Hemorrhages under the skin of the eyelids, their sources. Subcutaneous emphysema. Contusions of the eyeball: damage to the cornea, sclera, iris,

subconjunctival scleral tears, ciliary body damage, vitreous hemorrhage, lens damage (traumatic cataract), retinal shock, retinal tears and detachment, optic nerve damage. Symptoms and diagnostic methods.

Foreign bodies of the conjunctival cavity and cornea. Methods of detection, removal.

Penetrating injuries of the eyeball, absolute and relative signs of penetrating injuries of the eye. Principles of providing specialized care, complications. Dispensary.

Burns of the eye and its appendages. Symptoms and clinical course of burns of the eyelids, conjunctiva, cornea in acid, alkaline and thermal burns. Burns with radiant energy (ultraviolet, infrared, X-ray, ultrasonic radiation). First aid. Treatment is pathogenetic, symptomatic, medicinal, surgical. Complications and modern methods of treatment.

Topic 10. Retinal disease. Changes in general diseases (hypertensive disease, atherosclerosis, diabetes, etc.). Emergency conditions. Diagnostics. Providing first aid, tactics of further treatment.

Acute obstruction of the central vein of the retina and its branches. Clinic, diagnosis, treatment. Emergency aid. Prognosis, consequences. Embolism of the central retinal artery, features of the clinical course, diagnosis, treatment, emergency care, consequences.

Detachment of the retina. Etiology, pathogenesis, features of the ophthalmological picture. Terms and methods of operative interventions. Use of modern methods of treatment. The role of photo- and laser coagulation in the prevention and treatment of retinal detachment. Effects.

Neoplasm of the retina. Features of the clinical course, ophthalmoscopic picture of retinoblastoma. Modern methods of diagnosis and treatment.

Dystrophies of the retina in the area of the macula (hereditary, age-related). Pigmentary dystrophy of the retina.

Eye changes in cardiovascular diseases (hypertensive and hypotensive diseases, atherosclerosis).

Changes in the organ of vision in blood diseases (leukemia, malignant anemia), toxicosis of pregnant women, kidney diseases, in AIDS patients.

Changes in the organ of vision in diseases of the endocrine system (diabetes, diseases of the thyroid gland, hypophysis).

Topic 11. Disease of the optic nerve. Emergency conditions. Diagnostics. Providing first aid, tactics of further treatment.

Classification and spread of diseases of the optic nerve in adults and children.

Inflammation of the optic nerve (neuritis). Papillitis and retrobulbar neuritis (etiology, clinic), diagnostic features. Emergency aid. Principles of treatment. Effects.

Acute and chronic poisoning (methyl, ethyl alcohol, lead, quinine, narcotic substances, tobacco smoking), features of the clinical course. Emergency care, consequences.

Congestive disc of the optic nerve. Causes of development, stages of development. Features of each stage. Differential diagnosis with optic neuritis. Features of treatment.

Atrophy of the optic nerve. Anomalies of optic disc development (coloboma, fossa, myelin fibers, pseudoneuritis).

Medical examination of eye diseases. Resolving the issue of temporary incapacity for work and its duration, as well as permanent incapacity in connection with the profession. Definition of disability group.

Etiology, pathogenesis, clinic, methods of diagnosis and treatment of the patient subject to curation. Carrying out a differential diagnosis. Prognosis for recovery and further management of the patient.

Topic 12. Practicing skills in a simulation class.

Practicing the main methods of examining the organ of vision in a simulation class on dummies, self-examination, examination of the organ of vision in pairs.

Topic 13. Practicing skills in the office of emergency ophthalmological care.

Acquaintance with the work of the office of emergency ophthalmic care. Conducting diagnostic studies under the guidance of a teacher. Appointment of the necessary additional examination and treatment methods.

4. The structure of the academic discipline

Topic name	Number of hours		
	In total	including	
		practical	IW
Topic 1. Methods of examination in ophthalmology. Examination of visual functions (central vision, peripheral vision, binocular vision, color perception).	6	2	4
Topic 2. Refraction, accommodation. Methods of examination. Age changes and peculiarities of examination. Strabismus.	12	4	8
Topic 3. Methods of research of the accessory apparatus of the organ of vision. Blepharitis. Barley. Chalazion. Diagnosis of dacryocystitis, dacryoadenitis, demodex. Methods of prevention and treatment.	6	2	4
Topic 4. Conjunctivitis. Differential diagnosis of conjunctivitis. Methods of treatment. Dry eye syndrome, diagnosis, prevention, treatment.	6	2	4
Topic 5. Keratitis Methods of diagnosis, modern approaches to treatment, complications of keratitis.	6	2	4
Topic 6. Uveitis. Etiology, features of diagnosis and treatment, prevention of relapses.	6	2	4
Topic 7. Age-related changes of the lens. Cataracts. Research methods. Treatment. Complications.	6	2	4
Topic 8. Methods of examination of intraocular pressure. Ophthalmohypertension. Glaucoma. Dispensary observation. Treatment.	6	2	4
Topic 9. Damage of the organ of vision. Diagnostic. First aid. Tactics of further treatment.	6	2	4
Topic 10. Retinal disease. Changes in general diseases (hypertensive disease, atherosclerosis, diabetes, etc.). Emergency conditions. Diagnostics. Providing first aid, tactics of further treatment.	12	4	8
Topic 11. Disease of the optic nerve. Emergency conditions. Diagnostics. Providing first aid, tactics of further treatment.	6	2	4
Topic 12. Practicing skills in a simulation class.	6	2	4
Topic 13. Practicing skills in the office of emergency ophthalmological care.	6	2	4
IW	-	-	-
Total	90	30	60

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

5.1. Topics of lectures

Lectures are not provided.

5.2. Topics of seminar classes

Seminar classes are not provided.

5.3. Topics of practical classes

№	Topic name	Number of hours
1	Topic 1. Methods of examination in ophthalmology. Examination of visual functions (central vision, peripheral vision, binocular vision, color perception).	2
2	Topic 2. Refraction, accommodation. Methods of examination. Age changes and peculiarities of examination. Strabismus.	4
3	Topic 3. Methods of research of the accessory apparatus of the organ of vision. Blepharitis. Barley. Chalazion. Diagnosis of dacryocystitis, dacryoadenitis, demodex. Methods of prevention and treatment.	2
4	Topic 4. Conjunctivitis. Differential diagnosis of conjunctivitis. Methods of treatment. Dry eye syndrome, diagnosis, prevention, treatment.	2
5	Topic 5. Keratitis. Methods of diagnosis, modern approaches to treatment, complications of keratitis.	2
6	Topic 6. Uveitis. Etiology, features of diagnosis and treatment, prevention of relapses.	2
7	Topic 7. Age-related changes of the lens. Cataracts. Research methods. Treatment. Complications.	2
8	Topic 8. Methods of examination of intraocular pressure. Ophthalmohypertension. Glaucoma. Dispensary observation. Treatment.	2
9	Topic 9. Damage of the organ of vision. Diagnostic. First aid. Tactics of further treatment.	2
10	Topic 10. Retinal disease. Changes in general diseases (hypertensive disease, atherosclerosis, diabetes, etc.). Emergency conditions. Diagnostics. Providing first aid, tactics of further treatment.	4
11	Topic 11. Disease of the optic nerve. Emergency conditions. Diagnostics. Providing first aid, tactics of further treatment.	2
12	Topic 12. Practicing skills in a simulation class.	2
13	Topic 13. Practicing skills in the office of emergency ophthalmological care.	2
	Total	30

5.4. Topics of laboratory classes

Laboratory classes are not provided.

6. Independent work of a student of higher education

№	Topic name	Number of hours
1	Topic 1. Methods of examination in ophthalmology. Examination of visual functions (central vision, peripheral vision, binocular vision, color perception).	4
2	Topic 2. Refraction, accommodation. Methods of examination. Age changes and peculiarities of examination. Strabismus.	8
3	Topic 3. Methods of research of the accessory apparatus of the organ of vision. Blepharitis. Barley. Chalazion. Diagnosis of dacryocystitis, dacryoadenitis, demodex. Methods of prevention and treatment.	4
4	Topic 4. Conjunctivitis. Differential diagnosis of conjunctivitis. Methods of treatment. Dry eye syndrome, diagnosis, prevention, treatment.	4
5	Topic 5. Keratitis. Methods of diagnosis, modern approaches to treatment, complications of keratitis.	4
6	Topic 6. Uveitis. Etiology, features of diagnosis and treatment, prevention of relapses.	4
7	Topic 7. Age-related changes of the lens. Cataracts. Research methods. Treatment. Complications.	4
8	Topic 8. Methods of examination of intraocular pressure. Ophthalmohypertension. Glaucoma. Dispensary observation. Treatment.	2
9	Topic 9. Damage of the organ of vision. Diagnostic. First aid. Tactics of further treatment.	4
10	Topic 10. Retinal disease. Changes in general diseases (hypertensive disease, atherosclerosis, diabetes, etc.). Emergency conditions. Diagnostics. Providing first aid, tactics of further treatment.	8
11	Topic 11. Disease of the optic nerve. Emergency conditions. Diagnostics. Providing first aid, tactics of further treatment.	4
12	Topic 12. Practicing skills in a simulation class.	4
13	Topic 13. Practicing skills in the office of emergency ophthalmological care.	4
	Total	60

7. Teaching methods

The following methods will be used during lectures and practical classes:

- *Verbal*: lectures (problematic, lectures with analysis of specific situations), story, explanation, conversation, discussion, discussion of problematic situations, discussion of clinical situations.

- *Visually*: illustrations (including multimedia presentations), demonstrations, the method of direct observation.

• *Practical*: solving clinical tasks; simulation training; practicing practical skills on dummies, mannequins; curation of patients; writing an educational history of disease; performance of individual tasks.

Practical training: conversation, role-playing, solving clinical situational problems, practicing the skills of patient examination, practicing the skills of performing manipulations according to list 5, instruction and practicing skills on simulation dummies.

During practical classes, a large part of the time (at least 60%) should be devoted to working with patients, the results of laboratory tests, X-rays, etc. The rest of the time is for analysis and joint discussion of the results of students' independent work with error correction.

Independent and individual work when studying an academic discipline, it is provided by methodical developments for independent work of students, visual teaching aids (presentations, educational films), information resources of the department, the subject of independent and individual tasks for each task, algorithms for performing practical skills, algorithms for self- and mutual control of knowledge and skills, test tasks of the "Step-2" type for each class. Mastery of topics that are assigned only to independent work is checked during differential exam.

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

Current control is carried out at each practical session by means of an oral survey or written control. After studying each section, the mastery of practical skills is monitored based on the control of theoretical knowledge, practical skills and abilities.

The main forms of ongoing control are: oral survey, testing, solving situational clinical tasks, assessment of activity in class. The current educational activity of a student of higher education is evaluated in a practical session according to a traditional 4-point scale.

Evaluation of the current educational activity in a practical session:

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: a) communication skills of communication with the patient, b) the correctness of prescribing and evaluating laboratory and instrumental studies, c) compliance with the differential diagnosis algorithm, d) substantiating 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 practical lesson is the arithmetic average of all components and can only have an integer value (5, 4, 3, 2), which is rounded according to the statistical method.

The average grade for all activities of a student of higher education during the practical session becomes final.

Evaluation of the educational activity of all higher education students is not mandatory at every practical session. However, at least 50% of higher education applicants should be interviewed at the practical session.

At the end of the study of the discipline, the current success rate is calculated as the average score of all grades received by the student of higher education on a traditional scale, rounded to two decimal places.

Criteria for evaluating the student's work in a practical session

Оцінка	Критерії оцінювання
Excellent «5»	The student works systematically, shows versatile and in-depth knowledge of the program material during classes, is able to successfully perform the tasks provided for in the program, learns the content of the main and additional literature, is aware of the interrelationship of individual sections of the discipline, their importance for the future profession, shows creative abilities in understanding and the use of educational program material, shows the ability to independently update and replenish knowledge; level of competence - high (creative)
Good «4»	The student demonstrates full knowledge of the educational program material, successfully completes the tasks prescribed by the program, learns the basic literature recommended by the program, shows a sufficient level of knowledge in the discipline and is capable of their independent updating and renewal during further training and professional activity; level of competence - sufficient (constructive and variable)
Satisfactory «3»	The student demonstrates knowledge of the basic curriculum material to the extent necessary for further study and subsequent work in the profession, copes with the tasks provided for by the program, makes individual mistakes in answers, but possesses the necessary knowledge to overcome the mistakes made under the guidance of a scientific and pedagogical worker; level of competence — average (reproductive)
Unsatisfactory «2»	The student does not demonstrate sufficient knowledge of the basic curriculum material, makes fundamental mistakes in the performance of the tasks provided for by the program, cannot use the knowledge in further studies without the help of a teacher, has not managed to master the skills of independent work; the level of competence is low (receptive-productive).

The form of the **final control** is the balance.

Credit is awarded to a student who has completed all the tasks of the work program of the academic discipline, actively participated in practical classes and has an average current grade of at least 3.0 and has no academic debt.

Assessment is carried out: 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 with two decimal places after the decimal point.

Possibility and conditions of obtaining additional (bonus) points: not provided.

9. Distribution of points received by higher education applicants

The conversion of a traditional grade from a discipline to a 200-point grade is performed by the information and computing center of the university using the "Contingent" program according to the formula:

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»	Less than 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 establishes whether a student of higher education belongs 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, and a "B" grade cannot be equal to a "good" grade, etc. Applicants of higher education who received grades "FX" and "F" ("2") are not included in the list of applicants who are ranked. Such students of higher education automatically receive an "E" score after retaking.

The grade "FX" is assigned to students of higher education who have scored the minimum number of points for the current educational activity, but who have not passed the final examination. A grade of "F" is assigned to students of higher education who attended all classroom classes in the discipline, but did not receive an average score (3.00) for the current educational activity and were not admitted to the final examination.

According to the ECTS rating scale, the achievements of students in the discipline who are studying in the same course of the same specialty are evaluated, according to the points they received, by ranking, namely:

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

ECTS assessment	Statistical indicator
«A»	The best 10% of students
«B»	The next 25% of students
«C»	The next 30% of students
«D»	The next 25% of students
«E»	The last 10% of students

10. Methodical support

The teaching of the academic discipline in practical classes is ensured by methodical development of each practical class, visual teaching aids for each class (presentations, educational films), information resources of the departments, the subject of independent tasks for each task.

Independent and individual work in the study of an academic discipline is provided by methodological developments for the independent work of a student of higher education, visual teaching aids (presentations, educational films), information resources of departments.

11. List of recommended literature:

Basic:

1. Ophthalmology: textbook / O. P. Vitovska, P. A. Bezditko, I. M. Bezkorovayna et al.; edited by O. P. Vitovska. -2nd edition. - Kyiv: AUS Medicine Publishing, 2020. - 648 p.
2. Ophthalmology: textbook / O. P. Vitovska, P. A. Bezditko, I. M. Bezkorovayna et al.; edited by O. P. Vitovska. - Kyiv: AUS Medicine Publishing, 2017. - 648 p.
3. Atlas of Glaucoma. Second edition: textbook / Neil T. Choplin, Diane C. Lundy. - Informa healthcare, United Kingdom, 2007. -364 p. ISBN-10: 1841845183.

4. Common Eye Diseases and their Management: textbook / N. R. Galloway, W.M.K. Amoaku, P. H. Galloway and A. C. Browning; -Springer - Verlag London Limited, 2006. – 208 p. ISBN 1-85233-050-32.
5. Ophthalmology at a Glance: textbook / JANE OLVER, LORRAINE CASSIDY; - by Blackwell Science Ltd a Blackwell Publishing company, USA, 2005. -113 p. ISBN-10: 0-632-06473-0.

Additional:

1. Eye Diseases. Course of lectures: textbook / G. E. Venger, A. M. Soldatova, L. V. Venger; edited by V. M.Zaporozhan. - Odessa: Odessa Medical University, 2005. – 157p.
2. Ophthalmology: textbook. / Gerhard K. Lang, edited by J. Amann, O. Gareis, Gabriele E. Lang, Doris Recker, C.W. Spraul, P. Wagner. - Thieme Stuttgart. New York, 2000. - 604 p. ISBN 0-86577-936-8.
3. EYE Atlas. Online Atlas of Ophthalmology. / All rights Reserved, Oculisti Online. Copyright 2001. -408 p.
4. ABC of Eyes, Fourth Edition: textbook / P. T. Khaw, P. Shah, A. R. Elkington. - by BMJ Publishing Group Ltd, BMA House, Tavistock Square, London, 2005. - 97 p. ISBN 0 7279 1659

12. Electronic information resources

1. <https://info.odmu.edu.ua/chair/ophthalmology/>
2. <https://repo.odmu.edu.ua/xmlui/>
3. <http://library.gov.ua/>
4. <http://www.nbu.gov.ua/>
5. https://library.gov.ua/svitovi-e-resursy/dir_category/general/
6. <http://nmuofficial.com/zagalni-vidomosti/biblioteky/>
7. <https://guidelines.moz.gov.ua/documents>
8. www.ama-assn.org –American Medical Association
9. www.dec.gov.ua/mtd/home/
10. <http://bma.org.uk>
11. www.gmc-uk.org