

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

Petro Mohyla Black Sea National University

Medical Institute
Department of Therapeutic and Surgical Disciplines



"APPROVE"
1st Vice-Rector
Grishchenko NM

2019

CURRICULUM

"OPHTHALMOLOGY"

Field of knowledge 22 "Health care"
Specialty 222 "Medicine "

Developer
Head of the Department of Developer
Guarantor of the educational program
Director of the Institute
Head of SMD

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Description of the discipline

Name of the indicator	Characteristics of the discipline	
Name of the discipline	Ophthalmology	
Field of knowledge	22 "Health"	
Specialty	222 "Medicine"	
Specialization (if any)		
Educational program	Medicine	
Level of higher education	Master`s degree	
Course status	Normative	
Year course	4th	
Academic year	2021-2022	
Semester numbers	Full-time form	Part-time form
	7th	
Total ECTS credits / hours	3 credits (3,0)/90 hours	
Course structure: - lectures - practical classes - hours of independent work of students	Full-time form	Part-time form
	6 hours	
	34 hours 50 hours	
Percentage of classroom load	44,4%	
Language of teaching	Ukrainian	
Form of intermediate control (if any)		
Form of final control	Differentiated credit – 7 th semester	

2. Purpose, tasks and planned learning outcomes

The purpose of teaching the discipline "Ophthalmology" is to master the methods of diagnosis, treatment and prevention of diseases of the visual organ, especially the most common.

Learning objectives: the main objectives of the discipline are the study of anatomy, physiology of the visual organ and the auxiliary apparatus of the eye. The student must be able to use ethical and deontological principles of human vision, analyze the features of the visual organ, interpret the mechanisms of pathological processes of the visual organ, determine the etiological and pathogenetic factors of the main diseases of the visual organ, make a preliminary diagnosis of the most common eye diseases and injuries; determine the tactics of management of patients with major eye diseases; diagnose emergencies in ophthalmology and provide emergency medical care; plan preventive measures to prevent outbreaks of eye diseases, damage to the visual organ, the development of blindness.

Prerequisites for studying the discipline (interdisciplinary connections).
Ophthalmology as an academic discipline:

- a) is based on students' understanding of basic principles and knowledge of theoretical medical disciplines;
- b) integrates with these disciplines;
- c) provides in-depth knowledge of ophthalmology, the ability to use this knowledge in the process of further training and in the professional activities of the doctor;

Expected learning outcomes. As a result of studying the discipline, students must:

- master the theoretical knowledge needed to identify the most common eye diseases;
 - master the practical techniques and methods of examination of ophthalmic patients; approaches to clinical examination of the patient in an outpatient setting and ophthalmological hospital;
 - formation of students' moral, ethical and deontological qualities in professional communication with a patient with low vision or blind patients;
- various ophthalmic
- diseases;
 - to make a plan of examination of the patient, to interpret results of diagnostic and laboratory researches at eye diseases;
 - to carry out differential diagnostics, to substantiate and formulate clinical diagnosis of a patient with ocular pathology;
 - determine the tactics of the patient (patient);
 - prescribe non-drug and drug treatment education, including prognosis - modifying, patients with eye disease;
 - to carry out preventive work;
 - to determine the prognosis and efficiency of patients with ocular pathology;
 - to diagnose and provide medical care in emergencies in ophthalmology;
 - to perform medical manipulation;
 - to get acquainted with the maintenance of medical records in the ophthalmology clinic;
 - to demonstrate mastery of moral and deontological principles of a medical specialist and the principles of professional subordination.

According to the requirements of the educational and professional program, students must:

KNOW:

- have specialized knowledge about the human visual organ, anatomical and physiological features of different ages, know the methods and standard schemes of survey, collection of hereditary information,
- standard methods of examination, algorithms for diagnosing diseases, algorithms for identifying the leading symptoms;
- special methods of diagnostic and laboratory tests of the patient;
- algorithms and standard schemes for determining the mode of work and rest of patients during treatment, based on preliminary and clinical diagnosis;
- algorithms and standard schemes of nutrition for ophthalmic patients,
- have specialized knowledge of algorithms and standard schemes for the treatment of diseases;
- methods of examination of the visual organ in the absence of information;
- know the legal framework for providing emergency medical care to an ophthalmic patient, have specialized knowledge about the urgent conditions of the human eye, the principles of providing emergency medical care to an ophthalmic patient; 1 } } - system of preventive measures among the fixed contingent of the population,
- principles of medical examination in various diseases of the visual organ,
- to know the indicators of evaluation of the organization and effectiveness of medical examination in various ophthalmic diseases;
- know the anatomical, physiological and age features, diseases of the lens, retina and optic nerve.
- to know the relevant ethical and legal norms for surgical interventions in ophthalmic patients,
- the system of official document management in the work of the doctor, including modern computer information technology.

BE ABLE:

- interview the patient on the basis of algorithms and standards. Using special techniques to examine the patient. Be able to conduct a comprehensive assessment of human health,
- analyze the results of laboratory and instrumental studies and on their basis to assess information about the patient's diagnosis;
- conduct a physical examination of the patient, make an informed decision symptom or syndrome, make a preliminary and clinical diagnosis, prescribe laboratory and instrumental examination of the patient using standard techniques;
- to determine the necessary mode of work and rest of patients on the basis of preliminary and clinical diagnosis, by making an informed decision in the treatment of the disease;
- determine the principles and nature of treatment of diseases;
- determine the nature of nutrition of ophthalmic patients on the basis of previous and clinical diagnoses;
- determine the principles and nature of treatment of diseases;
- in the absence of information, using standard techniques, by making an informed decision to assess and identify the underlying clinical syndrome (or what causes the severity of the victim's condition);
- to provide emergency medical care to an ophthalmological patient in emergencies,
- to perform medical manipulations to an ophthalmological patient;
- to form groups of patients with various ophthalmological pathologies for their medical examination. Make a plan for medical examination of different groups. Have the skills to organize medical examinations of relevant contingents. Organize the promotion of a healthy lifestyle, primary prevention of diseases of the visual organ among the population,
- assess the condition of the ophthalmic patient to be operated on, perform medical manipulations to prepare the patient for surgery; finding the necessary information depending on its type,
- be able to process information and analyze the information obtained;

HAVE COMPETENCIES

- on the application of knowledge of ophthalmology for the diagnosis and treatment of eye diseases, promotion of healthy lifestyles;
- on the main promising research methods in ophthalmology for early diagnosis and treatment of the most common diseases of the eye

The developed program corresponds to *the educational-professional program (OPP)* and is focused on the formation of *competencies*:

general (GC) - GC1-GC3 EPP:

- Ability to abstract thinking, analysis and synthesis, the ability to learn and master modern knowledge.
- Ability to apply knowledge in practical situations.
- Knowledge and understanding of the subject area and understanding of professional activity

professional (PC) - PC1 - PC6, PC 8, PC 9 EPP:

- Survey skills
- Ability to determine the required list of laboratory and instrumental studies and evaluate their results.
- Ability to establish a preliminary and clinical diagnosis of the disease.
- Ability to determine the required training regime, work and leisure of healthy people and in the treatment of diseases.
- Ability to determine the nature of nutrition of healthy people and in the treatment of diseases.
- Ability to determine the principles and nature of treatment of diseases.
- Ability to determine the tactics of emergency medical care.
- Skills of emergency medical care.

According to the educational-professional program, the expected *program learning outcomes* (PLO) include skills *PLO-11, PLO13-PLO18, PLO22, PLO25 EPP:*

- Collect data on patient complaints, medical history, life history (including professional history), under the conditions of the health care institution, its unit or at the patient's home, using the results of the interview with the patient, according to the standard scheme of the patient's survey. Under any circumstances (in the health care facility, its unit, at the patient's home, etc.), using knowledge about the person, his organs and systems, according to certain algorithms:
 - collect information about the general condition of the patient (consciousness, constitution) and appearance (examination of the skin, subcutaneous fat, palpation of lymph nodes, thyroid and mammary glands); assess the psychomotor and physical development of the child;
 - examine the state of the cardiovascular system (examination and palpation of the area) heart and superficial vessels, determination of percussion intercardia and blood vessels, auscultation of the heart and blood vessels); } • examine the condition of the abdominal organs (examination of the abdomen, palpation and percussion of the intestines, stomach, liver, spleen, palpation of the pancreas, kidneys, pelvic organs, finger examination of the rectum); examine the condition of the musculoskeletal system (examination and palpation);
 - examine the condition of the nervous system; examine the condition of the genitourinary system;assess the state of fetal development according to the calculation of fetal weight and auscultation of the heartbeat.
- In the conditions of the health care institution, its subdivision and among the attached population:
 - Be able to identify and record the leading clinical symptom or syndrome (according to list 4) by making an informed decision using previous patient history, physical examination data patient,

knowledge of the person, his organs and systems, adhering to the relevant ethical and legal norms.

- Be able to establish the most probable or syndromic diagnosis of the disease (according to list 2) by making an informed decision, by comparing with standards, using preliminary patient history and patient data, based on the leading clinical symptom or syndrome, using knowledge about the person, his organs and systems
- Establish a preliminary clinical diagnosis (according to list 2) by making an informed decision and logical analysis, using the most probable or syndrome diagnosis, data laboratory and instrumental examination of the patient, conclusions of differential diagnosis, knowledge of man, his organs and systems, adhering to the relevant ethical and legal norms.
 - In the conditions of the health care institution, its subdivision:
 - Assign a laboratory and / or instrumental examination of the patient (according to list 4) by making an informed decision, based on the most probable or syndromic diagnosis, according to standard schemes, using knowledge about the person, his organs and systems, following the relevant ethical and legal norms.
 - Carry out differential diagnosis of diseases (according to list 2) by making an informed decision, according to a certain algorithm, using the most probable or syndrome diagnosis, laboratory data and instrumental examination of the patient, knowledge of the person, his organs and systems, adhering to the relevant ethical and legal norms.
 - Establish a preliminary clinical diagnosis (according to list 2) by making an informed decision and logical analysis, using the most probable or syndromic diagnosis, data of laboratory and instrumental examination of the patient, conclusions of differential diagnosis, knowledge of the person, his organs and systems, adhering to the relevant ethical and legal norms.

- Determine the necessary mode of work and rest in the treatment of the disease (according to list 2), in a health care facility, at home and at the stages of medical evacuation, including in the field, based on a preliminary clinical diagnosis, using knowledge about a person, his organs and systems, adhering to the relevant ethical and legal norms, by making an informed decision according to existing algorithms and standard schemes. in a health care facility, at the patient's home and at the stages of medical evacuation, including in the field on the basis of a previous clinical diagnosis, using knowledge about the person, his organs and systems, adhering to relevant ethical and legal norms, by adopting reasonable solution according to existing algorithms and standard schemes.

- Determine the necessary mode of work and rest in the treatment of the disease (according to list 2), in a health care facility, at home and at the stages of medical evacuation, including in the field, based on a preliminary clinical diagnosis, using knowledge about a person, his organs and systems, adhering to the relevant ethical and legal norms, by making an informed decision according to existing algorithms and standard schemes. in a health care facility, at the patient's home and at the stages of medical evacuation, including in the field on the basis of a previous clinical diagnosis, using knowledge about the person, his organs and systems, adhering to relevant ethical and legal norms, by adopting reasonable solution according to existing algorithms and standard schemes.

- To determine the nature of treatment (conservative, operative) of the disease (according to list 2), in a health care facility, at the patient's home and at the stages of medical evacuation, including in the field on the basis of a previous clinical diagnosis, using knowledge of man, his organs and systems, adhering to the relevant ethical and legal norms, by making an informed decision according to existing algorithms and standard schemes. Determine the principles of treatment of the disease (according to list 2), in a health care facility, at the patient's home and at the stages of medical evacuation, including field conditions, based on a preliminary clinical

diagnosis, using knowledge about the person, his organs and systems, adhering to the relevant ethical and legal norms, by making an informed decision according to existing algorithms and standard schemes.

- Establish a diagnosis (according to list 3) by making an informed decision and assessing the human condition, under any circumstances (at home, on the street, health care facilities, its units), including in emergencies, in the field conditions, in conditions of lack of information and limited time, using standard methods of physical examination and possible anamnesis, knowledge about the person, his organs and systems, adhering to the relevant ethical and legal norms.

- Perform medical manipulations (according to list 5) in a medical institution, at home or at work on the basis of previous clinical diagnosis and / or indicators of the patient's condition, using knowledge of the person, his organs and systems, adhering to relevant ethical and legal norms, by adopting reasonable solutions and using standard techniques.

- To form, in the conditions of a health care institution, its division on production, using the generalized procedure of an assessment of a state of human health, knowledge of the person, its bodies and systems, adhering to the corresponding ethical and legal norms, by acceptance of the reasonable contingent, among the fixed contingent population:

dispensary groups of patients;

groups of healthy people subject to dispensary supervision (newborns, children, adolescents, pregnant women, representatives of professions that must undergo a mandatory dispensary examination).

- Organize secondary and tertiary prevention measures among the assigned contingent of the population, using a generalized procedure for assessing human health (screening, preventive medical examination, seeking medical care), knowledge about the person, his organs and systems, adhering to relevant ethical and legal norms, by making an informed decision, in a health care facility, in particular:

to form groups of dispensary supervision,

to organize medical and health-improving actions differentiated from the group of medical examination.

- Carry out in the conditions of the health care institution, its subdivision:

- detection and early diagnosis of infectious diseases (according to list 2);
- primary with registration of the corresponding documents, in the conditions of health care institution on the basis of data on a disease and its course, features of professional activity of the person. anti-epidemic measures in the center of an infectious disease.

- In a health care facility, or at the patient's home on the basis of the obtained data on the patient's health, using standard schemes, using knowledge about the person, his organs and systems, adhering to relevant ethical and legal norms, by making an informed decision:

- determine the tactics of examination and secondary prevention of patients

subject to dispensary supervision;

- determine the tactics of examination and primary prevention of healthy

persons subject to dispensary supervision;

- calculate and prescribe the necessary food for children

in the first year of life. health on the basis of data on the disease and its course, features of human professional activity.

- In the service area according to standard methods of descriptive, analytical epidemiological and medical-statistical research:

- to carry out screening for the detection of the most important non-communicable diseases; disability, mortality, integrated health indicators;
- to identify risk factors for the occurrence and course of diseases;
- to form risk groups of the population.
- In the conditions of a health care institution or its subdivision according to standard methods:
 - to select and use unified clinical protocols
 for the provision of medical care, developed on the basis of evidence-based medicine;
 - Participate in the development of local medical protocols;
 - monitor the quality of health care based on statistics, expert evaluation and sociological research using indicators of structure, process and performance; which impede the improvement of the quality and safety of medical care.

3. Curriculum

The curriculum consists of three sections:

PART 1. ANATOMO - FUNCTIONAL FEATURES OF THE VISION. DISEASES OF THE ADDITIONAL EYE DEVICE.

PART 2. INFLAMMATORY AND DYSTROPHIC EYE DISEASES. PROGRESSIVE LOSS OF VISION.

PART 3. INJURY OF VISION. SUDDEN LOSS OF VISION.

PART 1. ANATOMY - FUNCTIONAL FEATURES OF THE VISUAL ORGAN. DISEASES OF THE ADDITIONAL EYE DEVICE

Specific objectives:

- Explain the anatomical features of the structure of the visual organ.
- Explain the features of the functions of the visual organ.
- Be able to determine visual acuity, field of vision, dark adaptation, color vision.
- Be able to determine the stages of examination of patients with pathology of the visual organ, medical records.
- To determine the refraction and accommodation of the eye.
- To provide sanitary and hygienic recommendations in case of refraction anomalies.
- To evaluate changes in the condition of the eyelids and lacrimal organs in normal and pathology. features of the clinical course of diseases of the orbit.
- To provide emergency care in acute inflammatory processes of the orbit and appendages.

Topic 1. Anatomy and physiology of the eye. Functions of the visual organ and research methods

Essay on the development of ophthalmology. History of domestic ophthalmology. The first eye clinics. Founders of domestic ophthalmology. Achievements of modern ophthalmology. Visual sensory system (visual analyzer, its main and auxiliary structures). The main structures (light-perceiving and analyzing apparatus, photoreceptors and retinal neurons, optic nerves, external geniculate bodies, visual cortex). Auxiliary structures (oculomotor apparatus and light guide apparatus). Eyeball, its outer capsule - sclera, cornea. Features of the structure of the cornea, ii innervation, nutrition, functions (refractive and protective). The choroid and its three parts: the iris, ciliary body, choroid. Iris, its structure, functions, blood supply, innervation. Ciliary body, ciliary processes, structure and functions (formation of intraocular fluid). Accommodation muscle, its features and innervation. Choroid, its structure and interaction with

the retina. Two systems of blood supply to the choroid, their role in the occurrence and spread of inflammatory processes.

Retina, its optic-nervous elements (cones and rods). Yellow spot, features of its structure. Visual act. Theory of vision. The main elements of the visual act: light perception, peripheral vision, shaped vision, binocular vision.

Optic nerve as a continuation of the inner layer of the retina, partial cross (chiasm) of the optic nerves, visual tract, subcortical visual centers, visual centers of the cerebral cortex.

Contents of the eyeball and eye chamber. Lens, functions (refractive and accommodation), features of its structure, nutrition. Tin ligament (ciliary girdle). Vitreous body. Front camera, its contents. Intraocular fluid, its composition and role in intraocular metabolism. Angle of the anterior chamber (iris-corneal), fountain spaces. Helmet canal (venous sinus sclera). Rear camera. Ways of outflow of intraocular fluid. Influence of the central nervous system through vasomotor and trophic devices on intraocular metabolism. Eye socket, orbital walls. Holes of the orbit: optic foramen (optic nerve, ocular artery), upper orbital fissure (oculomotor nerve, abductor nerve, block nerve, first branch of the trigeminal nerve), lower orbital fissure. The ratio of the orbit to the additional sinuses of the nose and cranial cavity. Orbital contents: orbital tissue, nerves, ciliary node, oculomotor muscles, place of their beginning and attachment, innervation, functions. Tenon capsule, tenon space, their meaning. Tarsoorbital fascia, its significance.

Central vision research. Visual acuity, unit of measurement, angle of view. The value of the minimum angle of view. The principle of constructing tables for measuring visual acuity. Determination of visual acuity using tables. The role of the optical system of the eye.

The study of color vision. Color and its main features. Conditions required for color recognition. Trichromasia of the normal human eye. Dichromasia. Explanation of errors made by dichromate. Diagnosis of color blindness. Polychromatic tables.

Investigation of peripheral field of view. Normal field of view, physiological scotoma. Methods of determining the field of view: control, perimetry, campimetry. Concentric narrowing of the field of view.

Sector-like defects, half loss of the field of view of both eyes (hemianopsia), limited defects in the field of view (scotoma). Cattle species (central, peripheral, relative, absolute, negative, positive).

Twilight vision study. Recognition threshold and irritation threshold, their instability. Adaptation. The theory of duality of vision. Adaptation curves. Hemeralopia. Methods of detecting generalopia. The Purkinje phenomenon and the method of S.V. Kravkova. Generalopia is symptomatic and essential, their connection with the general condition of the body, professional and living conditions. Fluorescent angiography. Methods of conducting. Assessment of the choroidal, arterial and venous phases.

Topic 2. Refraction and accommodation. Strabismus

The doctrine of refraction. Optical system of the eye, its components. The unit of measurement of diopter refraction. The concept of physical refraction of the eye and the age dynamics of its development. Objective and subjective methods for determining clinical refraction. Dependence of clinical refraction on the refracted power of optical media and the length of the eye axis. Characteristics of clinical refraction and its varieties: emetropia, myopia, hyperopia. Astigmatism. Research methods. The concept of proportional and disproportionate clinical refraction (emetropia, ametropia, anisometropia). Age characteristics and specific weight of different types of refraction.

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

Hyperopia (farsightedness). Age dynamics, distribution. Features of optical correction of hyperopia.

Myopia (myopia). Characteristics, age dynamics and distribution. Congenital and progressive myopia. Changes in the membranes of the eye during progressive myopia.

Pathogenesis, classification, the role of adverse factors. Principles of medical and surgical treatment. Prevention. Optimal ocular correction, contact correction, refractive surgery with excimer laser.

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

Accommodation. Convergence and its role in accommodation. Length and volume of accommodation. Age-related accommodation changes. Spasm and paralysis of accommodation, its causes. Diagnosis of accommodation spasms and its prevention. Visual fatigue (asthenopia) and methods of its treatment. Presbyopia (age, senile vision) and its correction depending on the initial clinical refraction and age. Visual hygiene in children and the elderly

Binocular vision research. Binocular vision and its essence. The concept of appropriate and inappropriate points of the retina. Physiological doubling. Conditions of deep vision. The role of the cerebral cortex in stereoscopic vision. The scheme of work of the eye motor muscles. Fixation and fusion eye movements. Education of the fusion reflex. Estimation of depth, eye gauge. Methods of determining binocular vision: adjusting pyx with two pencils, experiment with a hole in the palm. Binocular vision disorders.

Changes in the oculomotor system that occur most often. Disorder of deep (binocular) vision. Imaginary and hidden strabismus. Common and paralytic strabismus. Principles of treatment of common and paralytic strabismus. Prevention of strabismus. Nystagmus, causes, principles of treatment.

Iridodiagnostics as a method of assessing the constitutional possibilities of the body's response to the pathological process

Topic 3. Diseases of the eyelids, lacrimal organs, orbits, conjunctiva

Blepharitis, barley, chalazion, abscess, eyelid phlegmon. Defects of the neuromuscular system of the eyelids. Ptosis, lagophthalmos. Congenital anomalies (coloboma of the eyelids, ankyloblepharon, torsion, inversion of the eyelids, epicanthus, ptosis). Diseases of the eyelids caused by demodicosis (features of the clinical picture, diagnosis, treatment and prevention)

Neoplasms of the eyelids (benign, malignant). Indications for surgical treatment, cryodestruction, radiation therapy, diathermocoagulation and chemotherapy.

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

Congenital and acquired changes of the tear ducts. Absence of or dislocation of lacrimal points, narrowing of or obliteration of lacrimal tubules, diverticula of the lacrimal sac, stenosis of the lacrimal canal. Methods of diagnosis, principles and term of surgical treatment.

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 surgical treatment. Prevention.

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

Professional selection, labor and military examination in pathology of the lacrimal organs.

Inflammatory diseases of the orbit: osteoperiostitis, phlegmon of the orbit, cavernous sinus thrombosis associated with diseases of the dental system (periodontitis acute and chronic, basal granulomatitis, granulomatitis, granulomatitis, and abscesses of the maxillofacial area and neck, boils or carbuncles of the face, erythema of the face).

Ways of spreading the infection into the orbit (through venous and lymphatic vessels, hematogenously - metastatically). General symptoms characteristic of the inflammatory process in the orbit.

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

Neoplasm of the orbit. Benign tumors (cysts, dermoid cysts, angiomas, osteomas). Malignant tumors (sarcoma, carcinoma). Use of radiography, computed tomography, magnetic resonance imaging, venography, carotid angiography, thermography in the diagnosis of orbital tumors. Features of the clinical course. Methods of treatment.

Conjunctivitis. Acute conjunctivitis, complaints, discharge, type of conjunctiva, conjunctival injection of the eyeball and pericorneal. Etiology. Methods of treatment. Prevention of conjunctivitis in children. Epidemic conjunctivitis caused by Koch-Wicks' disease. Measures of mass prevention, sanitary and hygienic measures. Features of diagnosis of acute conjunctivitis (diplobacillary, pneumococcal, diphtheria) and treatment.

Gonoblenorrhoea in newborns and adults. Its prevention and treatment. Consequences. General and local treatment.

Viral conjunctivitis (herpesvirus, adenoviral). Features of diagnosis and treatment.

Measles and smallpox conjunctivitis: diagnosis, clinical course, treatment and prevention.

Chronic conjunctivitis. The need to identify and eliminate chronic factors. Chronic conjunctivitis as an occupational pathology and prevention measures in industry and agriculture. Trachoma. Definition. Etiology. Pathogenesis. Four stages of trachoma development. Consequences. Complication. Paratrachoma. Etiology. Pathogenesis, features of diagnosis and treatment. Differential diagnosis with follicular and follicular conjunctivitis. Treatment: medical, surgical, general. Treatment of complications. Distribution and epidemiology of trachoma and paratrachoma. Control of trachoma in Ukraine.

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

Conjunctival tumors. Benign (dermoid, papilloma), malignant (melanoma, cancer). Indications for radiation therapy, diathermocoagulation, surgical treatment.

SECTION 2. INFLAMMATORY AND DYSTROPHIC EYE DISEASES. PROGRESSIVE LOSS OF VISION

Specific objectives:

- To be able to assess the state of the injection of the eyeball.
- Interpret the data of biomicroscopy of the cornea, anterior chamber, iris, lens, vitreous, normal and in pathology.
- Be able to provide emergency care in acute keratitis, corneal ulcers, iridocyclitis, uveitis.
- Be able to diagnose cataracts and justify treatment.
- Be able to interpret the state of intraocular pressure.
- Be able to diagnose glaucoma and the procedure for providing assistance.

Topic 4. Diseases of the sclera, cornea, vascular membrane

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

Keratitis of viral etiology. Adenovirus keratoconjunctivitis. Clinic. Course. Local and general treatment. Epidemiology. Prevention. Keratitis caused by diseases of the conjunctiva,

eyelids and meibomian (tarsal) glands. Treatment. Prevention. Catarrhal keratitis in acute conjunctivitis. Prevention, treatment.

Keratitis of endogenous origin. Infectious keratitis. Keratitis in congenital syphilis (parenchymal). Clinic. Cyclical flow. Consequences. Causes. Symptoms of congenital syphilis. Serological indicators. Treatment is specific, tonic and locally symptomatic.

Tuberculous keratitis. Hematogenous tuberculous keratitis during tuberculous metastatic iridocyclitis. Pathogenesis. Clinic. General treatment: specific complex, desensitizing, tonic, local treatment: symptomatic and specific.

Tuberculous-allergic keratitis. Clinic and course. The general condition of the child's body. General treatment: specific, desensitizing and tonic. Local treatment: specific and symptomatic. Prevention of tuberculous lesions.

Neurogenic keratitis. Neuroparalytic keratitis during trigeminal nerve injury. Features of the clinic - lack of sensitivity, eye reactivity. Herpetic keratitis. Clinic of various forms. Course. Consequences. Theories of pathogenesis. Treatment. Keratitis during shingles. Clinic of lesions of the cornea, skin and general condition. General and local treatment.

Fungal lesions of the cornea. Clinic, course, features of diagnostics. Specific treatments.

Aeviamine keratitis. Corneal lesions with beriberi A. Prexerosis. Corneal xerosis.

Keratomalacia. Clinic. Course. Treatment. Prevention.

Corneal dystrophy. Primary dystrophies: Grenou's degeneration, Fera's spotted dystrophy, Dimmer's lattice dystrophy, Mesmann's epithelial dystrophy, Schneider's corneal degeneration, familial Francois spotted dystrophy. Secondary corneal dystrophies. Causes, features of clinic and treatment.

Etiology, pathogenesis of scleral diseases (scleritis, episcleritis, ectasia, scleral staphylococcus, scleromalacia). Diagnosis and modern methods of treatment.

Scleral neoplasms, diagnosis, treatment.

Frequency of vascular diseases among general ocular pathology. Severe consequences of vascular diseases as a cause of poor vision and blindness. The structure of diseases of the vascular tract (inflammatory, dystrophic processes, tumors, congenital anomalies).

Inflammation of the vascular tract (uveitis). The most common causes of uveitis in people of all ages. Pathogenetic mechanisms of uveitis: infectious-metastatic and toxic-allergic. Classification of uveitis by course, localization, clinical and morphological picture, etiology, immunological status. The main morphological, functional features and mechanisms of uveitis (choroiditis, panuveitis). Age features of the course and consequences of uveitis. Differentiated diagnosis of diseases of the vascular tract depending on their etiology by clinical, laboratory (need for auxiliary research methods: radiological, electrophysiological and immunological) picture (influenza, collagen, viral, tuberculous, syphilitic, toxoplasmosis, focal). Organization, principles, methods of general and local treatment of anterior and posterior uveitis depending on the etiology and nature of the process. Consequences. Prevention. Dystrophic diseases of the iris and ciliary body. Causes. Forms (chronic dysfunction of the ciliary body, Fuchs syndrome). Differential diagnosis with anterior uveitis. Clinic, course, principle of treatment.

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

Vascular neoplasms.

Vascular neoplasms. Benign (cysts, nevi, neurofibromas, neurinomas, leiomyomas). Features of the clinic, principles of treatment. Malignant tumors (melanoma, melanosarcoma). Diagnosis. Indications for surgical and laser treatment.

Topic 5. Lens diseases, vitreous diseases, glaucoma

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

Indications for surgery. Aphakia, methods of correction. Congenital cataract (clinic, diagnosis, treatment). Anomalies of lens development.

Definition and cardinal symptoms of glaucoma. Classification. The importance of the state of the cardiovascular and nervous systems in the occurrence and course of glaucoma. Open-angle and closed-angle glaucoma (diagnosis, clinical course). Acute glaucoma attack. Complaints. Symptoms are local and general. Course. Consequences of treated and untreated acute attack. Differential diagnosis with acute iritis. Urgent treatment: conservative general and local. Indications and terms of surgical treatment. Differential diagnosis of glaucoma with initial senile cataract. Course. Treatment: miotic regimen, indications for surgical and laser treatment, principles of surgical treatment. Glaucoma patient regimen. Clinical examination.

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. Active detection of glaucoma patients. Clinical examination of patients with glaucoma.

PART 3. INJURY OF VISION. SUDDEN LOSS OF VISION.

Specific objectives:

- To be able to determine the nature of disorders in the oculomotor system of the eye.
- To be able to provide emergency care for:
 - a) a foreign body of the conjunctiva,
 - b) a foreign body of the cornea,
- Be able to provide emergency care for:
chemical, thermal burns of the visual organ, penetrating injuries, explain changes in the retina and optic nerve with sudden loss of visual functions,
- Be able to interpret changes in the organ of vision in general diseases of the body (diabetes, atherosclerosis, hypertension).

Topic 6. Diseases of the retina, optic nerve changes in the eye in general diseases

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

Retinal degeneration in the macula (hereditary, age). Retinal pigment dystrophy.

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

Changes of the eye in cardiovascular diseases (hypertensive and hypotonic diseases, atherosclerosis). Changes in the organ of vision in blood diseases (leukemia, malignant anemia), toxicosis of pregnant women, kidney disease, in AIDS patients.

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

Medical examination of eye diseases. Addressing the issue of temporary disability and time limits, as well as permanent disability due to the profession. Definition of disability group. Employment of people with significantly reduced and lost visual function. Ukrainian Society of the Blind (YTOC).

Simulation, aggravation, dissimulation of visual functions. Subjective and objective methods of detection.

Requirements for the organ of vision during selection in the Ukrainian Army. List of diseases that limit fitness and determine unfitness for military service. Military medical examination. Commissions, their composition, functions. Methods for finding out the simulation and dissimulation of visual disorders.

Organization of eye care in Ukraine.

Regional and district ophthalmologists. Eye rooms of district polyclinics and medical units, medical and preventive work. Eye hospitals.

Topic 7. Damage to the eye and additional apparatus. Clinic, emergency care

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

Contusion of the eyelids. Hemorrhages under the skin of the eyelids, ix sources. Subcutaneous emphysema. Contusions of the eyeball: damage to the cornea, sclera, iris, subconjunctival ruptures of the sclera, damage to the ciliary body, hemorrhage into the vitreous, damage to the lens (traumatic cataract), retinal concussion, retinal tears and detachment, optic nerve damage. Symptoms and methods of diagnosis. Treatment of the consequences of contusions of the eyeball and additional apparatus of the eye.

Foreign bodies of the conjunctival cavity and cornea. Methods of detection, selection. Penetrating eyeball injuries, absolute and relative signs of penetrating eye injuries. Principles of providing specialized care, complications. Medical examination.

Burns of the eye and its appendages. Symptoms and clinical course of eyelid, conjunctival, corneal burns in acid, alkaline and thermal burns. Radiant energy burns (ultraviolet, infrared, X-ray, ultrasonic radiation). First aid. Treatment is pathogenetic, symptomatic, medical, surgical. Complications and modern methods of treatment.

Occupational injuries of the visual organ. Eye injuries in industry, its causes, nature, measures to combat it. Features of agricultural eye injuries. Organization of self- and mutual assistance and delivery to a specialist. Eye damage in the chemical industry. Causes, methods of combating it.

Occupational eye diseases. The effect of mechanical dust on the eyelids, conjunctiva, cornea. Consequences of constant action of chemically active substances directly on eyes and as a result of the general intoxication. Occupational eye diseases due to the constant action of radiant energy. Principles of organization of the fight against eye injuries: sanitary measures, measures for individual protection.

Protection of medical history. Curation of patients.

Topic 8. Emergencies in ophthalmology

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

Optic nerve inflammation (neuritis). Papillitis and retrobulbar neuritis (etiology, clinic), features of diagnosis. Emergency aid. Principles of treatment. Consequences.

Acute and chronic poisonings (methyl, ethyl alcohols, lead, quinine, drugs, smoking), features of the clinical course. Emergency care, consequences. Stagnant optic disc. Causes of development, stages of development. Features of each stage. Differential diagnosis with optic neuritis. Features of treatment.

Inflammation of the chiasm (chiasm, optic-chiasmal neuritis). Clinic, diagnosis, treatment. Lesions of the visual cord (visual tract). The role of visual field research in the diagnosis of diseases of the chiasm and visual tract. Clinic, diagnosis, treatment. Emergency aid. Forecast, consequences. Central retinal artery embolism, features of the clinical course, diagnosis, treatment, emergency care, consequences.

Retinal detachment. Etiology, pathogenesis, features of the ophthalmic picture. Terms and methods of surgical interventions. Use of modern methods of treatment. The role of photo- and laser-coagulation in the prevention and treatment of retinal detachment. Consequences.

Retinal neoplasms. Features of the clinical course (retinoblastoma), ophthalmoscopic picture. Modern methods of diagnosis and treatment.

Curation of patients.

STRUCTURE OF THE COURSE "OPHTHALMOLOGY"

Names of sections of the discipline and topics	Number of hours				
	Full-time				
	Total	Including			
		Lectures	Practise	Individual	Independent
PART 1. ANATOMO-FUNCTIONAL FEATURES OF THE VISUAL ORGAN. DISEASES OF THE ADDITIONAL EYE DEVICE.					
Topic 1. Anatomy and physiology of the eye. Functions of the visual organ and research methods.	10	0	4		6
Topic 2. Refraction and accommodation. Strabismus.	11	1	4		6
Topic 3. Diseases of the eyelids, lacrimal organs, orbit, conjunctiva. Curation of patients	11	1	4		6
Total under part 1, hours	32	2	12		18
PART 2. Inflammatory and dystrophic diseases of the eye. Gradual loss of vision.					
Topic 4. Diseases of the sclera, cornea, vascular membrane.	11	1	4		6
Topic 5. Diseases of the lens, dystrophic diseases of the vitreous, glaucoma.	11	1	4		6
Total for content part 2, hours	22	2	8		12
PART 3. Inflammatory and dystrophic diseases of the eye. Sudden loss of vision.					
Topic 6. Diseases of the retina, optic nerve, eye changes in inflammatory diseases.	8	0	2	0	6
Topic 7. Damage to the eye and additional apparatus. Clinic, emergency care. Curation of patients	10	1	3	0	6
Topic 8. Emergencies in ophthalmology.	14	1	5		8
Topic Final lesson with the final control work.	4	0	4	0	0
Total for the content part 3, hours	36	2	14	0	20
TOTAL HOURS IN THE DISCIPLINE	90	6	34	0	50

3. Content of the discipline

4.1. LECTURE PLAN

#	Topic name	Number of hours
1	Diagnosis and emergency care, prevention of inflammation of the eyelids, lacrimal organs and orbit. Inflammation of the conjunctiva and membranes of the eye ("red eye" - conjunctivitis, keratitis, iridocyclitis, uveitis, retinitis, endophthalmitis, panophthalmitis). Diagnosis and treatment. Prevention.	2
2	Gradual decrease in vision: presbyopia. Cataract: congenital, acquired (traumatic, complicated, secondary, senile). Macular degeneration. Optic nerve atrophy. Neoplasm of the eyeball. Glaucoma. Diagnosis, treatment, prevention.	2
3	Damage to the organ of vision and the additional apparatus of the eye. Emergency aid. Prevention, medical examination.	2
Total lectures on discipline		6

4.2. PLAN OF PRACTICAL LESSONS

#	Topic name	Number of hours
PART 1. ANATOMICAL AND FUNCTIONAL FEATURES OF THE VISUAL ORGAN. DISEASES OF THE ADDITIONAL APPARATUS OF THE EYE		
1	Topic 1. Anatomy and physiology of the eye. Functions of the visual organ and research methods.	4
2	Topic 2. Refraction and accommodation, strabismus.	4
3	Topic 3. Diseases of the eyelids, lacrimal organs, orbits, conjunctiva.	4
PART 2. INFLAMMATORY AND DYSTROPHIC EYE DISEASES. PROGRESSIVE LOSS OF VISION.		
4	Topic 4. Diseases of the sclera, cornea, choroid.	4
5	Topic 5. Diseases of the lens, dystrophic diseases of the vitreous, glaucoma.	4
PART 3. INJURY OF VISION. SUDDEN LOSS OF VISION		
6	Topic 6. Diseases of the retina, optic nerve, changes in the eye in inflammatory diseases.	2
7	Topic 7. Damage to the eye and additional apparatus. Clinic, emergency care.	3
8	Topic 8. Emergencies in ophthalmology. Protection of medical history	5
9	Final lesson	4
TOTAL FROM THE DISCIPLINE		34

4.3. INDEPENDENT WORK PLAN

#	TOPIC	Number of hours
PART 1. ANATOMO-FUNCTIONAL FEATURES OF THE VISUAL ORGAN. DISEASES OF THE ADDITIONAL APPARATUS OF THE EYE.		
1	Anatomy and physiology of the eye. Functions of the visual organ and research methods.	6
2	Refraction and accommodation. Strabismus	6
3	Diseases of the eyelids, lacrimal organs, orbit, conjunctiva. Curation of patient	6
TOTAL PART 1		18
PART 2. INFLAMMATORY AND DYSTROPHIC DISEASES OF THE EYE. PROGRESSIVE LOSS OF VISION.		
4	Topic 4. Diseases of the sclera, cornea, vascular membrane.	6
5	Topic 5. Diseases of the lens, dystrophic diseases of the vitreous, glaucoma.	6
TOTAL PART 2		12
PART 3. INJURY OF VISION. SUDDEN LOSS OF VISION.		
6	Diseases of the retina, optic nerve, eye changes in inflammatory diseases.	6
7	Damage to eye and accessory. Clinic, emergency care. Curation of patients	6
8	Emergencies in ophthalmology	8
TOTAL PART 3		20
TOTAL FOR THREE PARTS		50

Typical test tasks to be solved in practical classes:

1. A 78-year-old patient with hypertension suddenly lost sight of his right eye to the number of fingers near his face. At the fundus of the optic disc with blurred borders, retinal edema. Multiple polymorphic hemorrhages, a symptom of "crushed tomato". Formulate a preliminary diagnosis.
 - A. Acute glaucoma attack.
 - B. Chorioretinitis.
 - C. Central retinal vein thrombosis.
 - D. Acute obstruction of the central retinal artery.
 - E. Macular degeneration

2. A patient at work received an eye injury with metal shavings. On examination: left eye - pericorneal injection, T -2, anterior chamber small, on the cornea a linear wound up to 3 mm, the pupil is irregularly shaped, pulled up to the wound. Analyze which diagnosis is the most likely?
 - A. Penetrating scleral injury.
 - B. Penetrating corneal injury.
 - C. Contusion of the eyeball.
 - D. Impenetrable eyeball injury.
 - E. Iridocyclitis

3. The worker observed the operation of the electric welding machine. After 6 hours, he developed tears in his eyes, photophobia, tearing, and blepharospasm. Objectively: swelling and redness of the eyelids, tearing, blepharospasm, injection of the eyeball. Make a diagnosis.
 - A. Burns of the mucous membranes and corneas of both eyes.

- B. Electroophthalmia of both eyes.
- C. Thermal burns of the mucous membranes and corneas of both eyes.
- D. Keratitis of both eyes.
- E. Contusion of both eyes.

4. The patient complains of severe pain in the right eye, photophobia, tearing, impaired vision, which occurred 3 days ago. On examination: the orbit is narrowed, swelling of the eyelids, pericorneal injection, grayish infiltrate in the center of the cornea, forming a twig. Diagnosis.

- A. Keratitis.
- B. Corneal opacity.
- C. Iridocyclitis
- D. Conjunctivitis
- E. Foreign body of the cornea

Individual tasks

Selection and review of scientific literature on the subject of the ophthalmology program of the student's choice with the writing of the abstract and its public defense.

At the request of the student while studying relevant topics he can perform individual work extracurricular time and if it is successfully completed, it is additionally assessed by the teacher.

The list and content of individual tasks can be determined in each case depending on the logistics of the departments.

Approximate list of individual tasks:

1. Interrogation of an indicative patient, his general examination and examination of the visual analyzer with the selection of the main symptoms and syndromes of the disease.
2. Carrying out of researches of function of the visual analyzer at indicative patients, processing of the received data and the report on employment
3. Analysis of images of optical coherence tomography of the retina and optic nerve in fainting patients with data processing and report in class
4. Work with literature and other sources of information and preparation of an abstract report on modern methods of examination of patients in an ophthalmology clinic.
5. Work with the literature and other sources of information and preparation of an abstract report on the features of the syndrome diagnosis of a disease with a typical course, selected at the request of the student

Tasks for independent work

The basic list of types of independent work of students, developed in accordance with the structure of the discipline, is presented in the section "Independent work". The obligatory type of independent work of students is the supervision of patients and the writing of a detailed history of the disease, which is provided in the study of the relevant sections.

4.4. Ensuring the educational process

1. Multimedia projectors, computers, screens for multimedia presentations, lecture presentations.
2. Demonstration screens, laptops, Power Point and Word files with "Step-2" tasks for practical and final classes.
3. When studying the discipline, all kinds of teaching methods recommended for high school are used, namely:
 - by sources of knowledge: verbal (explanation, lecture, conversation, discussion); visual (demonstration); practical (practical work, mastering practical skills), on which special emphasis is placed on the study of the discipline;

according to the logic of the educational process: analytical (selection of individual symptoms of the disease), synthetic), their combination - analytical-synthetic, as well as inductive method (mainly in the study of block 1), deductive (in the study of blocks 2 and 3,), their combination - translational method (in the study of all blocks); level of independent mental activity: problem, partial-search, research.

Combining and generalizing the above teaching methods, when studying the discipline it is advisable to introduce such methods of organizing classes as:

- the method of clinical cases,
- problem-research method,
- the method of individual teaching -research tasks,
- method of competitive groups,
- method of training technologies,
- method of conducting scientific conferences with the use of interactive, interdisciplinary and information-computer technologies

Types of educational activities of the student, according to the curriculum, are lectures, practical classes, independent work of students.

Lecture and practical stages of students' learning are formed in such a sequence that the topics of lectures precede practical classes.

Practical classes consist of four structural parts:

- 1) mastering the theoretical part of the topic,
- 2) demonstration by the teacher of methods of research of the thematic patient,
- 3) work of students on working off of practical skills at a bed of the patient under the control of the teacher,
- 4) the decision of situational problems and test control of mastering of material

When conducting practical classes, the main place is occupied by mastering practical skills in physical examination of the patient and working directly with patients.

On the basis of mastering clinical methods of examination of the patient, the ability to synthesize and interpret, evaluate and analyze them, the student develops clinical thinking and skills of syndromic diagnosis, which is the main task of the discipline. the study of the discipline is an important place. In addition to the traditional pre-classroom training on theoretical issues of ophthalmology, it includes students' work in ophthalmology departments, clinical laboratories and functional diagnostics departments in extracurricular activities, the effectiveness of which should be ensured by teachers and support staff. Independent work includes curation of patients with writing a medical history, which involves questioning and complete physical examination of the patient to determine the leading syndromes, the appointment of diagnostic manipulations and participation in the algorithm of medical care for this patient.

5. Final control

List of questions of final control (differentiated offset)

List of questions for mastering part 1:

«ANATOMO-FUNCTIONAL FEATURES OF THE ORGANS OF VISION. DISEASES OF THE ADDITIONAL EYE DEVICE ».

1. Visual analyzer, its importance in cognition of the external world.
2. History of ophthalmology. Founders of domestic ophthalmology. Odessa School of Ophthalmology.
3. Achievements of modern ophthalmology. Outstanding ophthalmologists: VP Filatov, I.Y. Меркулов, H.O. Puchkovskaya, ML Krasnov, MM Krasnov, SM Fedorov.
4. The concept of absolute, professional and social blindness. The main causes of blindness. Prevention of blindness in adults and children.
5. Blindness. Indicator of blindness. Training and employment of the blind (UTOS).

6. Formation of visual images. The role of the cerebral cortex in the act of vision. Theories of the act of sight.
7. Cornea. Its structure, blood supply, properties and functions.
8. Iris. Its structure, blood supply, properties and functions.
9. Ciliary body and choroid. Their structure, functions.
10. Muscles of the iris and ciliary body. Retina, its structure, functions of rods and cones.
11. Anatomy of the optic nerve, features of its structure and topography.
12. Crystal. Its functions, power, properties.
13. Blood supply to the eyeball.
14. The structure of the orbit and its contents.
15. Eyelid muscles. Their function and innervation.
16. The structure of the conjunctiva. Clinical signs of her normal condition.
17. Anatomy of the lacrimal organs. Methods of research of lacrimal ways.
18. External muscles of the eye. Their innervation and functions.
19. Twilight vision, its disorders, research methods.
20. Study of visual acuity. Visual acuity formula.
21. Principles of constructing tables to determine visual acuity. Angle of view.
22. Peripheral vision and its research. Types of visual field disorders.
23. Color perception, its disturbances, research methods. Theories of color perception.
24. Methods of examination of the anterior segment of the eye (focal, bifocal illumination, biomicroscopy).
25. Methods of research of optical environments of the eye.
26. The main elements of the refractive system of the eye. The concept of diopter.
27. Types of clinical refraction. The role of the external environment in the formation of refraction.
28. Methods of determining refraction (objective and subjective).
29. Correction of ametropia in children and adults. Optical glasses and their applications. Contact lenses and their applications.
30. Accommodation and its age changes. Presbyopia.
31. Hyperopia, its clinic, diagnosis and correction.
32. Myopia, its clinic, causes of development, complications, prevention, progression.
33. Astigmatism, its types and correction.
34. The main conditions of binocular vision. The value of binocular vision in choosing a profession.
35. Strabismus: classification, diagnosis, clinic, treatment.
36. Anomalies of eyelid position (entropion, ectropion, ptosis, lagophthalmos). Causes, clinic, methods of treatment.
37. Inflammatory diseases of the eyelids: barley, chalazion, blepharitis. Clinic, treatment.
38. Dacryocystitis, etiology, clinic, treatment.
39. Inflammatory diseases of the orbit (osteoperiostitis, phlegmon of the orbit, sinus thrombosis), clinic and treatment.
40. Clinical course, etiology and methods of treatment of acute inflammation of the mucous membrane.
41. Clinical manifestations, etiology and methods of treatment of chronic conjunctivitis.
42. Stages of trachoma, their clinic, general principles of treatment.
43. Social and personal prevention of trachoma.
44. Complications of trachoma from the eyelids and cornea.

List of questions for mastering part № 2:

«INFLAMMATORY AND DYSTROPHIC DISEASES OF THE EYE. PROGRESSIVE LOSS OF VISION.»

1. Classification, clinic and consequences of keratitis.

2. Creeping corneal ulcer, its clinic and treatment.
3. Parenchymal keratitis, clinic and treatment.
4. Herpetic keratitis. Their diagnosis and treatment.
5. Serous iridocyclitis. Its clinical features, course, diagnosis, treatment.
6. Clinical signs of fibrinous iridocyclitis, etiology, pathogenesis, methods of treatment.
7. Intraocular tumors, clinical course, treatment.
8. Ophthalmoscopy, its types.
9. Picture of a normal fundus.
10. Ways of outflow of intraocular fluid.
11. Dynamic classification of glaucoma.
12. Methods of early diagnosis of glaucoma. The value of dispensary examination of patients with glaucoma.
13. Clinical forms of primary glaucoma, treatment.
14. Differential diagnosis of primary glaucoma and cataracts.
15. Acute glaucoma attack, its clinic, emergency care, treatment. Differential diagnosis with iridocyclitis.
16. Secondary glaucoma, its causes, clinic, treatment.
17. Congenital glaucoma, its causes, clinic and treatment.
18. Anomalies of the lens position, diagnosis, complications, treatment
19. Congenital cataract. Clinic, diagnosis, methods of treatment.
20. Stages of development of age-related cataracts. Diagnosis and treatment.
21. Diagnosis and conservative treatment of early stage cataracts.
22. Traumatic cataract. Features of its course, complications, surgical treatment.
23. Complicated cataract, its causes, clinic, treatment.
24. Secondary cataract, its clinic, causes, surgical treatment.
25. Aphakia, its symptoms, correction.

List of questions for mastering part 3:

«VISUAL INJURY. SUDDEN LOSS OF VISION.

1. Signs of penetrating injuries of the eyeball. Emergency care for them.
2. Penetrating eye injuries complicated by the presence of a foreign body. Methods of localization of a foreign body in the eye.
3. Principles of removal of intraocular foreign bodies at penetrating eye injuries.
4. Complications of penetrating injuries.
5. Sympathetic inflammation, its clinic, prevention, treatment.
6. Contusions of the eyeball. Their manifestations and treatment.
7. Corneal foreign bodies and emergency care.
8. Electroophthalmia. Its clinical manifestations and first aid.
9. Endophthalmitis and panophthalmitis. Their clinic, causes, treatment.
10. Chemical eye burns, clinic, emergency care.
11. Thermal eye burns, clinic, emergency care.
12. Military medical examination for eye diseases.
13. Detection of aggravation and simulation. Control methods for checking visual acuity.
14. Establishment of a disability group due to visual impairment.
15. Clinic of optic neuritis. Causes, differential diagnosis with congestive optic disc.
16. Ophthalmoscopic picture of congestive optic disc. Its significance in the diagnosis of brain tumors.
17. Changes of the fundus in hypertension, diabetes, blood diseases, AIDS.
18. Retinal detachment, etiology, clinic, treatment.
19. Acute disorders of retinal circulation. Causes, clinic, treatment.
20. Retinoblastoma. Diagnosis. Clinic. Treatment.
21. Organization of ophthalmological care in Ukraine.

Sets of practical tasks are formed directly from the list of practical skills that the student must acquire during the study of each of the sections of the discipline, which are standardized by the method of practical work.

List of practical skills that a student must learn when studying ophthalmology for differential test:

Be able to:

1. determine visual acuity by subjective method
2. determine color perception using Rabkin polychromatic tables
3. determine the field of view by the control method and using the arc perimeter
4. determine dark adaptation by oriented method

Be able to conduct research and evaluate results:

1. examination and inversion of the eyelids to examine the conjunctiva
2. examination of the cornea by lateral illumination
3. determine the sensitivity of the cornea
4. palpation to determine the pain of the ciliary body
5. determine intraocular pressure tonometrically
6. determine intraocular pressure by palpation
7. study of the lens in transmitted light and side lighting
8. determination of the Hirschberg angle of strabismus
9. perform an external eye examination:
 - focal illumination
 - bifocal illumination
 - eye mobility

Be able to provide emergency care:

1. in acute iridocyclitis
2. in acute conjunctivitis
3. with a foreign body of the conjunctiva, cornea
4. in an acute attack of glaucoma
5. with penetrating eye injury
6. with chemical and thermal burns of the eye

Diagram of medical history

1. Passport part (surname, name, patronymic, age, place of work, profession, home address).
2. Date of admission of the patient to the clinic (ambulance, in the direction of the clinic).
3. Complaints of the patient.
4. History and illness of the patient.
5. General status: skin, peripheral lymph nodes, cardiovascular system, respiratory system, digestive tract, musculoskeletal system.
6. Special status:
 - a) visual acuity with and without correction;
 - b) field of view;
 - c) biomicroscopy;
 - d) gonioscopy;
 - e) direct and reverse ophthalmoscopy;Preliminary diagnosis.
7. Additional clinical and laboratory methods of research:
 - a) examination of SWOT by control method;
 - b) B-scanning;
 - c) optical coherence tomography;
 - d) refractometry
 - e) blood and urine tests;

- f) bacteriological examination of a conjunctival smear.
 - g) consultation with a physician, ENT doctor, dentist, neurologist) to determine the etiology of the disease
- Differential diagnostics.
- 8. The final diagnosis.
 - 9. Treatment.
 - 12. Diary.
 - 13. Forecast.
 - 14. Epicrisis.
 - 15. Abstract on one of the questions (determined by the teacher), which relates to the disease of the supervised patient: etiology, pathogenesis, etc.

"0" ticket option for differential credit
Petro Mohyla Black Sea National University
 Educational qualification level - master
 Field of knowledge: 22 Healthcare
 specialty 222 Medicine
 Course - Ophthalmology
Variant № 0

- 1. Ciliary body and choroid. Their structure, functions - **the maximum number of points - 20.**
- 2. Methods of early diagnosis of glaucoma. The value of the dispensary examination of patients with glaucoma - **the maximum number of points - 20.**
- 3. **Practical skill:** an algorithm for providing emergency care in an acute glaucoma attack. - **the maximum number of points is 20.**
- 4. **Situational task:** A 78-year-old patient with hypertension suddenly lost sight of his right eye to the number of fingers near his face. At the fundus of the optic disc with blurred borders, retinal edema. Multiple polymorphic hemorrhages, a symptom of "crushed tomato". Formulate a preliminary diagnosis. With what diseases it is necessary to carry out differential diagnosis. What is the treatment for this disease? - **maximum number of points - 20.**

Approved at the meeting of the Department of "Therapeutic and Surgical Disciplines", minutes № ___ from " __ " _____ 2020

**Head of the Department
 Examiner**

**Professor Zak M. Y.
 Candidate of Medical Sciences Sichko G.V.**

Example of final control work

Solving problems Step-2

- 1. Patient Z., 25, complains of severe pain in the left eye, impaired vision, photophobia, tearing. Wears contact lenses. The orbit is narrowed. Pericorneal injection, grayish arcuate infiltrate parallel to the cornea. Diagnosis.
 - 1. Keratitis.
 - 2. Conjunctivitis
 - 3. Opacity of the cornea
 - 4. Iridocyclitis
 - 5. Corneal foreign body

- 2. The patient complains of sharp pain in the right eye, tearing, photophobia, decreased vision; Two days ago, while walking in the field, he hit an eye with a spikelet. Objectively: the orbit is closed, swelling of the eyelids, mixed injection, on the cornea - turbidity of grayish-yellow color

with a crescent-shaped edge, hypopion. The iris changed color. Pupil narrow, irregularly shaped. Sharp ciliary pain. Diagnosis.

1. Chorioretinitis.
2. Conjunctivitis
3. Creeping corneal ulcer
4. Barley
5. Corneal pain

3. Patient K., 35 years old, complains of severe pain in the right eye, photophobia, tearing, visual impairment, which appeared after working with the welding machine. During the examination, the orbit is narrowed, moderate pericorneal injection. The cornea is swollen. Please help.

1. Instillation of dicaine solution 0.25%.
2. Dexamethasone solution 0.1%
3. Dry heat.
4. Sulfacil Na 20% in eye drops.
5. Taufio solution

4. The patient complains of pain, tearing, photophobia, a sharp decrease in visual acuity in the left eye. The orbit is closed, pericorneal injection. The cornea is diffuse and cloudy. Diagnosis. 1. Keratitis.

2. Iridocyclitis.
3. Corneal pain.
4. Conjunctivitis
5. Phlegmon of the orbit

5. The patient complains of sharp pain in the right eye, tearing, photophobia. While working in the shop, "something" caught my eye. Objectively: the orbit is narrowed, a foreign body is found on the cornea. Emergency aid.

1. Dry heat
2. Removal of a foreign body, laying ointments with antibiotics.
3. Instillation of alkain solution, removal of foreign body, instillation of 0.25% chloramphenicol solution.
4. Removal of foreign body, instillation of 0.25% solution of chloramphenicol
5. Instillation of dicaine solution, application of ointment with antibiotics

6. Patient M., 22 years old, complains of pain, tearing, photophobia, a sharp decrease in visual acuity in the left eye. Objectively: the orbit is closed, pericorneal injection, the cornea is diffusely cloudy. Make a diagnosis.

- 1.
2. Keratitis.
3. Iridocyclitis.
4. Conjunctivitis.
5. Corneal foreign body

7 A 30-year-old patient complained of sudden reddening of the right eye, photophobia, a feeling of "sand" in the eye, tearing, which appeared 3 days ago, and today similar symptoms, but not so pronounced, appeared in the left eye. Objectively: the expressed hypostasis of eyelids, hyperemia of a conjunctiva in a site of a transitional fold. Small point hemorrhages in the conjunctiva of the upper eyelid, minor mucopurulent discharge. Diagnosis. 1. Acute conjunctivitis of both eyes.

2. Iridocyclitis.
3. Chronic conjunctivitis.
4. Blepharitis.

5. Keratitis

8 Patient I., 50 years old, complains of severe itching, burning and tearing in the eyes, redness of the skin in the outer corners of the orbit. Objectively: the skin near the outer corners of the orbit is macerated, eczematously altered, there are single soaking cracks. The conjunctiva of the eyelids is hyperemic, fluffy. Excretion is insignificant in the form of viscous mucus. Diagnosis.

1. Acute conjunctivitis.
2. Barley.
3. Angular conjunctivitis.
4. Blepharitis.
5. Allergic dermatitis of the eyelids

9. You were approached by a 36-year-old patient with complaints of pain in the right eye, foreign body sensation, purulent discharge from the right eye. The upper eyelid is swollen, hyperemic. In the area of the hair follicle yellowish head of the abscess. Diagnosis.

1. Abscess.
2. Barley.
3. Chalazion.
4. Conjunctivitis.
5. Dacryocystitis

10 You were approached by a 28-year-old patient with complaints of eye fatigue, headache, especially when reading. An ophthalmologist prescribed glasses three years ago, but the patient did not use them. During the examination: eyelids hyperemic, slightly swollen, thickened. At the base of the eyelashes - scales. Diagnosis.

1. Blepharitis.
2. Conjunctivitis
3. Allergic swelling of the eyelids.
4. Barley
5. Chalazion

And so 30 problems with the subsequent analysis of typical errors.

6. Evaluation criteria and diagnostic tools for learning outcomes

TEACHING METHODS

a) lectures, b) practical classes, c) independent work of students, d) consultations.

Thematic plans of lectures, practical classes and VTS reveal problematic issues of the relevant sections of ophthalmology. Didactic tools (multimedia presentations, slides, educational films, demonstration of thematic patients) are used as much as possible in the lecture course. Lecture and practical stages of students' learning are composed, mainly, in such a way that lectures or preceded by appropriate practical classes, and when rotating thematic sections, are read in one block.

Practical classes are held on the clinical basis of the department. The method of organizing practical classes in ophthalmology includes the need to:

- make the student a participant in the process of providing medical care to patients from the moment of their treatment or hospitalization, examination, diagnosis, treatment before discharge or termination of treatment;
- to master professional practical skills; skills of working in a team of students, doctors, other participants in the process of providing medical care;
- to form in the student, as a future specialist, an understanding of responsibility for the level of their training, its improvement during training and professional activities. To implement this, it is

necessary to provide the student with a detailed plan of work in the clinic at the first lesson and provide conditions for its implementation. This plan should include:

- research that the student must master (or read),
- algorithms (protocols) of examinations, diagnosis, treatment, prevention in accordance with the standards of evidence-based medicine; {1} - patient supervision, which should be carried out by the student during the cycle;

Patient supervision includes:

- 1) clarification of the patient's complaints, medical history and life, conducting examination of organs and systems;
- 2) conducting a physical examination of the patient and determining the main symptoms of the disease; }
- 3) analysis of laboratory and instrumental examination data;
- 4) formulation of the diagnosis;
- 5) appointment of treatment;
- 6) determination of primary and secondary prevention measures;
- 7) report on the results of examination of the patient by a team of students in the study group, analysis under the guidance of the teacher of the correctness of diagnosis, differential diagnosis, examination, treatment tactics, assessment of prognosis and performance, prevention. which it is necessary to enter brief information about the patients examined during the practical lesson, diagnosis, examination plan and prescribed treatment.

individual work of students is 55% of the curriculum. It includes:

- ✓ pre-classroom and extracurricular training of students on the course,
- ✓ students' work in departments on the clinical basis of the department, including laboratories and departments (offices) of functional diagnostics, interpretation of laboratory data and instrumental research methods in ophthalmic pathology in extracurricular time;
- ✓ acquisition of practical skills through work with patients;
- ✓ individual VTS (speech at the scientific-practical conference of the clinic, writing articles, report on the practical classes, participation in the work of the student group, competitions in the discipline, etc.);
- ✓ work in a computer class to prepare for the exam Step-2; .
- ✓ work on topics that are not included in the classroom plan.

Teachers of the department provide the opportunity to carry out VTS during practical classes and monitor and evaluate its implementation. Topics submitted for self-study are evaluated during the final control.

METHODS OF CONTROL

It is recommended to conduct practical classes with the inclusion of:

- 1) control of the initial level of knowledge through tests;
- 2) surveying students on the topic of the lesson;
- 3) management of 1-2 patients with diseases and conditions corresponding to the subject of the lesson, followed by discussion of the correctness of diagnosis, differential diagnosis and treatment with the use of evidence-based medicine and in accordance with National and European guidelines and protocols;
- 4) consideration of the results of additional research methods (laboratory and instrumental) used in the diagnosis and differential diagnosis, the consideration of which is provided by the topic of practical training;
- 5) control of the final level of knowledge on the test tasks made in the format of Step-2.

Mastering the topic (**current control**) is controlled in a practical lesson in accordance with specific goals, assimilation of semantic sections - in practical final lessons. It is recommended to use the following tools to assess the level of preparation of students: computer tests, problem solving, laboratory research and interpretation and evaluation of their results, analysis and evaluation of instrumental research and parameters that characterize the functions of the human body, control of practical skills.

The current control is carried out by the teacher of the academic group after the students have mastered each topic of the discipline and grades are set using a 200-point scale of the university, which corresponds to the 200-point scale of ECTS.

The final lesson (FL) is conducted after the logically completed part of the discipline, consisting of a set of educational elements of the work program, which combines all types of training (theoretical, practical, etc.), elements of educational and professional program (academic discipline, all types of practices). certification), which are implemented by appropriate forms of the educational process. The department provides information for preparation for the software, placing on the information stand and on the website of the department the following materials:

- basic and anchor test tasks LII "Step-2";
- a list of theoretical questions (including including questions from independent work);
- list of practical skills;
- list of drugs, prescriptions of which must be prescribed by the student;
- list of medical records;
- criteria for assessing students' knowledge and skills;
- schedule of students completing missed classes during the semester.

Final control:

1. Solving a package of test tasks on the content of educational material, which includes the following:

- basic test tasks on the subject, which cover the content of educational material

final lesson in the amount of **30 tests** corresponding to the database "Step-2" .

Evaluation criterion

- **70.0%** of correctly solved tasks; "Passed" or "did not pass";

2. Assessment of the development of practical skills (assessment criteria - "performed" or "failed").

3. During the assessment of the student's knowledge on theoretical issues, as well as issues for independent work included in this final control, the student is given a grade on a multi-point scale, as well as a grade for current learning activities (CLA).

4. Tasks for practical and professional training that reflect the skills and abilities during the supervision of thematic patients, evaluation of the results of laboratory and instrumental research methods and the choice of treatment tactics, which are defined in the list of the work program of the discipline.

5. Tasks for diagnosis and assistance in emergencies.

The final lesson is accepted by the teacher of the academic group. Forms of software should be standardized and include control of all types of training (theoretical, practical, independent, etc.), solving test tasks "Step-2", provided by the work program of the discipline. At the beginning of the lesson students solve test tasks "Step-2" in the amount of 30 tasks, then at the patient's bedside the group teacher takes practical skills, which are assessed "completed", "failed", then students write written work, each ticket contains 5 theoretical questions, which include questions submitted for independent work, followed by an oral interview with the student, followed by a grade for the practical lesson.

Assessment of students' individual tasks. The meeting of the department approved a list of individual tasks (participation with reports in student conferences, profile competitions, preparation of analytical reviews with presentations with plagiarism) and determined the number of points for their implementation, which can be added as incentives (**not more than 10**). Points for individual tasks are awarded to the student only once as a commission (commission - head of the department, head teacher, group teacher) only if they are successfully completed and defended. In no case may the total amount of points for CLA exceed 120 points.

Assessment of students' independent work. Assimilation of topics that are submitted only for independent work is checked during the final control and differentiated credit.

In order to assess the results of training in the discipline is **the final control in the form of differentiated credit**. Only students who have passed all the topics of the classes and the final control are admitted to the test.

The test in the discipline "Ophthalmology" is a process during which the results obtained during the semester are tested:

- the level of theoretical knowledge;
- the development of creative thinking;
- skills of independent work;
- competencies
- the ability to synthesize the acquired knowledge and apply them in solving practical problems. Step ";
- list of theoretical questions (including questions from independent work);
- list of practical skills;
- list of drugs, prescriptions of which must be prescribed by the student;
- criteria for assessing students' knowledge and skills,
- schedule for students to complete missed classes during the semester.

Offsetting.

1. Assessment of theoretical knowledge on the tickets drawn up at the department, which contain two theoretical questions from the sections of the discipline, which were studied during the semester.

2. Assessment of practical skills acquisition.

3. Evaluation of the solution of the situational problem.

Distribution of points in the evaluation - see above in the example of the test ticket. The maximum score on the test is 80 points, the test is considered passed if at least 50 points are scored (see the table below).

Distribution of points received by students

As mentioned above, a 200-point scale is used in the evaluation.

Accordingly, **the maximum score for each topic is: 15 points. The minimum score is 8.75 points.**

A score lower than 8.75 points means "unsatisfactory", the topic is not credited and must be worked out in the prescribed manner.

On the differentiated test, the maximum positive score is **80 points**, the minimum – **50**.

Assessment of student`s performance

Type of activity (task)	Maximum number of points
Topics from 1st to 8th	15 points for each topic
Total for 8 topics	120
Differential credit	80
Total for CLA and credit	200

Criteria for assessing knowledge

A score of 15 points per topic and 71-80 points on the test (A on the ECTS scale and 5 on the national scale) **student`s response is assessed if it demonstrates deep knowledge of all theoretical positions and ability to apply theoretical material for practical analysis and has no inaccuracies.**

Score 12-14 points per topic and 61-70 points on the test (B and C on the ECTS scale and 4 on the national scale) **the answer is evaluated if it shows knowledge of all theoretical principles, use them in practice, but some fundamental inaccuracies are allowed.**

With a score of 9-11 points per topic and 50-60 points on the test (D and E on the ECTS scale and 3 on the national scale) **the student's answer is evaluated provided that he knows the main theoretical principles and can use them in practice.**

7. RECOMMENDED LITERATURE

7.1. Basic literature

1. Офтальмологія: підруч. для студ. вищ. мед. навч. закл. IV рівня акредитації / [Г. Д. Жабоедов та ін.] , за ред. чл.-кор. НАМН України, проф. Ф. Д. Жабоедова, д-ра мед. наук, проф. Р. Л. Скрипник. - К. Медицина, 2011. - 424 с.
2. Офтальмологія. Практикум: навч. посіб. для студ. вищ. мед. навч. закл. IV рівня акредитації / Г. Д. Жабоедов, В. В. Кіреев. - К. : Медицина, 2013.
3. Безкоровайна І. М., и др.. Офтальмологія : Навчальний посібник для студентів вищих медичних закладів III-IV рівнів акредитації. - Полтава Дивосвіт, 2012. - 248 с. 2012 (<https://medinfo.live/ofthalmologii-osnovyi/ofthalmologiya-navchalniy-posibnik-dlya.html>)
4. Венгер, Г. Ю.. Очні хвороби. Курс лекцій [Текст] : навч. посіб. для студ. вищ. мед. закладів освіти III-IV акредитації / Г. Ю. Венгер, А. М. Солдатова. - О. : Одеський медуніверситет, 2003. - 176 с.
5. Офтальмологія у схемах: навч. посіб. для студ. вищ. навч. закл. IV рівня акредитації / Харк. нац. мед. ун-т ; уклад.: П. А. Бездітко [та ін.]. - Х. : Золоті сторінки, 2008. - 80 с.

7.2. Additional literature

1. Глазные болезни и травмы Е.Е.Сомов «СПб», 2002 — 236 с.
2. Клиническая офтальмология / Под редакц. Джек Дж.Кански Перевод с английского. Москва изд-во «Логосфера», 2006.- 733 с.
3. Лекішвілі С. Е. Практична офтальмологія: навч. посіб. / С. Е. Лекішвілі. — Суми Сумський державний університет, 2015. — 234 с.
4. Офтальмологія: підруч. для студ. вищ. навч. закл. та лікарів-інтернів сімейн. медицини / [Бездітко П. А. та ін.] ; за заг. ред. П. А. Бездітка ; Харк. нац. мед. ун-т. - Х. : Форт, 2012. - 247 с.

7.3 Information resources on the Internet

1. Електронний сайт Національної бібліотеки України імені В.І. Вернадського;
2. Електронний сайт Національної наукової медичної бібліотеки України;
3. Електронна база наукових публікацій Національної медичної бібліотеки Національного інституту здоров'я США.
4. Освітній портал НМУ імені О.О. Богомольця.