

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE  
Petro Mohyla Black Sea National University  
Medical Institute  
Department therapeutic and surgical disciplines

"APPROVE"  
The first vice-rector  
Ishchenko NM

“ ”  2021 years

CURRICULUM WORK PROGRAM

OPHTHALMOLOGY

Area of knowledge 22 "Health"  
Specialty 222 "Medicine"

Developer  
Head of the Department of  
Developer  
Guarantor of the educational  
program  
Director of the Institute  
Chief of EMD

Girjeva A.

Zack M. Yu.  
Klymenko MO

Grishchenko GV  
Shkirchak SI



## INTRODUCTION

Indicator name	Characteristics of the discipline	
Discipline name	Traumatology and orthopedics	
The field of knowledge	22 Ohorona zdorovya	
Speciality	222 "Medicine"	
Specialization (if any)	The medical profession	
Education programme	Medicine	
Level of higher education		
Status of the discipline	Normative	
Course of study	4	
School year	2021 – 2022	
Semester numbers:	Denna form	Correspondence form
		-
Total number of ECTC credits/year	3 credits / 90	
Course Structure:	Denna form	Correspondence form
	• lectures	
	• practical exercises	-
	• Years of self-study work by students	
	8	
	22	
	60	
Invalidation of the classroom workload	- 30%	
Language of instruction	eng	
Form of industrial control (if any)	Attestation	
Form of summary control	Reference room	

**The subject** of studying the educational discipline "Ophthalmology" is clinical anatomy, physiology, methods of examination of the eye and its appendages, etiology, pathogenesis, Diagnostics and treatment of the most widespread ophthalmologic diseases, sanitary-epidemic regime in ophthalmology clinic; The translation material and ways of its use; clinic, diagnosis, first aid, principles of treatment for traumatic injuries; riddles of ignition diseases of the eye; fundamentals of ophthalmology-oncology; methodology of examination of ophthalmic patients.

The **object of activity** - preservation of health of the population, prophylaxis and treatment of diseases of the organ of vision and its appendages.

**Interdisciplinary links Ophthalmology as an educational discipline:**

*a) is based on the students' knowledge:*

- Medical and biologic physics: physical optics, physical basis of diagnostic and physiotherapeutic (treatment) methods used in medical equipment; interpretation of general physical and biophysical laws that underlie human life activity;
- Human anatomy: identify topographic and anatomical relations between human organs and systems; interpret statutory, age and individual peculiarities of human body structure;
- Microbiology, virology and immunology: Interpret the biologic properties of pathogenic and nonpathogenic microorganisms, viruses and patterns of their interaction with the macroorganism, human population and the environment; interpret the basic mechanisms of formation of immune response of the human body;
  
- histology, cytology and embryology: interpret the microscopic structure of different human organs in the aspect of interconnection of tissues that make up their structure in different age periods, as well as in the conditions of physiological and reparative regeneration;
- Physiology: analyze sensory processes in the maintenance of human life activity; explain the physiological basis of the methods of examination of the organism's functions;
- Intravenous diseases: determine the tactics of patient management in the most common therapeutic diseases; diagnose and provide urgent care for the main neurological conditions in the hospital of intravenous diseases;
- The following are the most common surgical diseases; plan the examination of the patient, interpret the results of laboratory and examinations in the most common surgical diseases and their complications;
- Pathomorphology: interpret etiology, pathogenesis and morphological changes at different stages of disease development, structural bases of disease appearance, complications and consequences of diseases;
- Pathophysiology: interpret the causes, mechanisms of development and manifestations of typical pathological processes;
- Radiology: choose optimal method of examination for revealing functional and morphological changes in pathology of different organs and systems;
- Neurology: identify the main symptoms and syndromes of various parts of the nervous system;
- Otorhinolaryngology: make an initial diagnosis of the most common ENT diseases and injuries;
- The main tasks of the study include: planning the scheme of examination of a patient for tuberculosis, analyzing the obtained data and determining the treatment regimen for patients with different clinical forms of tuberculosis and intensifying these disciplines;

*b) establishes the basis for students' learning:*

- Infectious diseases: identify the main clinical symptoms that form the characteristic syndrome of the most common infectious diseases;
- epidemiology: interpret the causes and patterns of epidemic process development, the main regulatory documents in the field of epidemiology;
- occupational diseases: conduct examination of the patient, make an anterior diagnosis and determine the tactics of management of patients with the most widespread occupational diseases;
- Oncology: determine the tactics of examination and management of patients with suspected malignant tumors,

The study is based on the integration of teaching with these disciplines and the formation of the ability to use the knowledge of ophthalmology in the process of further training and in professional activities;

c) *laying the foundation for a healthy way of life and prevention of visual impairment in the process of life activity.*

- **Objectives of the teaching discipline**

- ***The aim*** of teaching educational discipline "Ophthalmology" is:
  - of the methods of diagnostics;
  - Treatment and prophylaxis of the most widely spread ophthalmologic diseases;
  - systematic knowledge of the organization of ophthalmological care;
  - Formation of practical skills in the use of ophthalmic instruments;
  - The study of ophthalmologic patients;
  - Introduction to the principles of local and general public health;
  - Ability to diagnose traumatic injuries of the visual organ and its appendages and to provide first aid for them
  - Introduction to the fundamentals of ophthalmology-oculology;
- Formation of practical skills on examination of an ophthalmologic patient and registration of its results in the medical card of a hospital patient;
- Formation of ability to use acquired knowledge, skills, abilities and knowledge of ophthalmology for solving typical tasks of activity of the doctor in the field of health care at the appropriate position, The scope of use is provided by the specified lists of syndromes and symptoms of diseases, physiological conditions and diseases that require a special tactics of management of patients, unreasonable conditions, laboratory and instrumental examinations, medical manipulations.
- The main ***objectives of the*** study of the discipline "Ophthalmology" is:
  - Mastering of basic procedures necessary for organization of work in the ophthalmology department and ensuring prevention of occurrence and spread of intravenous infections;
  - Practical skills in the examination of the organ of vision and its appendages;
  - Practical skills for providing first aid in such conditions as injuries of the visual organ and its appendages: contusions, wounds and ophthalmic injuries;
  - Practical skills for biomicroscopic and ophthalmoscopic examination of the visual organ;
  - Knowledge of the basics of local and general anesthesia, ability to choose the method of pain relief depending on the condition of the patient and existing ophthalmopathy;
  - Developing practical skills for the diagnosis and differential diagnosis of various ophthalmologic infectious processes, acquiring skills for the selection of the treatment program and preventive measures for infections of the organ of vision and its appendages;

- learning of skills and abilities for examination of an ophthalmologic patient and registration of the results in the appropriate medical documentation;
  - Formation of moral and ethical and deontological qualities in professional communication with patients.
- **Program competencies and learning outcomes, the formation of which contributes to the discipline.**

The discipline provides for the acquisition of *competencies* by students:

- ***Integral:*** ability to solve complex tasks and problems in a particular area of professional activity or in the process of training, which involves conducting research and / or implementation of innovation and is characterized by complexity and unambiguity of conditions and requirements;
- ***Zagalni:***
  - ability to think abstractly, analyze and synthesize;
  - ability to know and understand the subject area and professional activity;
  - ability to communicate in the state language;
  - Ability to adapt and make informed decisions in a new situation;
  - Ability to act on the basis of ethical considerations, in a socially responsible and conscientious manner
- ***Specifics (faculties, subjects):***
  - Skills to guide the patient through the clinical examination (history taking) of an ophthalmologic patient)
  - Ability to determine the list of necessary clinical and laboratory and instrumental examinations and to evaluate their results (creation of examination plan and evaluation of their results);
  - Ability to establish the anterior and clinical diagnosis of the disease (carrying out an extensive examination of the ophthalmologic patient; conducting a differential diagnosis);
  - The competence to determine the principles of treatment of diseases, the necessary mode of work and rest and the nature of catering (the recognition of the appropriate treatment);
- Competence to diagnose unplanned conditions (provision of first medical aid);
- Competence to determine the tactics and provide immediate medical aid (assessment of the importance of clinical manifestations of the disease);
  - Competence to perform medical manipulations (performance of medical procedures and medical manipulations (irrigation of conjunctival cavity, filling of eyelids, irrigation of sulcus passages, application of ointment, turning the upper lobe));
  - The competence to determine the tactics of management of patients who are subject to dispensary supervision (ensuring the supervision of the weakly-skilled);
- Competence to conduct the performance appraisal
- Competence to keep medical records

Detailedization according to the NQF descriptors in the form of the "Competency Matrix".

### **Competency matrix**

No.	Competence	Knowledge	Skills	Communication	Autonomy and Responsibility
1	2	3	4	5	6
<b>Integral competence</b>					
Competence to solve complex problems in a particular field of activity or in the learning process, which involves research and/or innovation and is characterized by complexity and unambiguity of conditions and requirements					
<b>General competencies</b>					
GC1	Credentials to the abstract thinking, analysis and synthesis.	Know how to analysis, synthesis and further modern teaching	Know how to conduct analyze the information, Make informed decisions. informed decisions, be able to acquire up-to-date knowledge	Install appropriate links to achieve goals.	To be responsible for responsibility for the timely acquiring up-to-date knowledge
GC2	The ability to know and Understand subject field and professional activity.	Know the current trends in the development of industry and Analyze them. Have knowledge of the the structure of professional activities.	Know how to conduct analyze professional information, be able to carry out professional activities that requires updating and integration of knowledge	The performance is effective form COMMUNICATION strategy in professional activities	To be responsible for the Responsibility for professional development, ability to Will be able to continue their professional advancement ability to continue their professions in the future with a high autonomy.
GC3	Credentials Speak in state language	Mati znanii for active using native language in various communicative situations	The ability to understand and in writing express their thoughts, feelings, clearly and arguments explain the facts	The role of language for efficient communication and cultural self-expression	Willingness to learn Ukrainian language as a native in various life situations, as well as a love for reading, the feeling beauty of words
GC5	The ability to adaptation and acceptance of a well-grounded decision in a new situation	Know the types and ways of adaptation, the principles of action in the the new situation, tactics	Know how to use Self-regulation tools. regulation, be able to adapt to new situations (circumstances) of life and activity,	Install appropriate links to achieve result. Use strategies of communication. Skills inter-organizational Interaction.	To be responsible for responsibility for the timely use of methods self-regulation, for Choice of tactics communication methods that ensures decision

		strategies of interaction.	be able to accept grounded decisions decisions, choose the ways and strategies of communication to ensure the efficient and effective organization of the to ensure an effective teamwork.		making.
GC9	The commitment to act on the basis of on the basis of ethical ideology, socially ethical and in good faith	Knowledge of the basics ethics and Deontology.	Know how to use ethical and deontological ethical and deontological norms and principles in professional activities.	The credentials to bring to patients, members of their families, peers their professional position	To be accountable for the fulfillment of the responsibility for the fulfillment of the ethical and deontological ethical and deontological norms and principles in the professional professional activity
<b>Specific (professional, subject) competences</b>					
SK1	Skills communication and clinical examinations of patients.	Know the possible The consequences of the collection of information The importance of collecting information about the disease in a patient	Know how to be able to Gather all information about the disease from the words of the patients	Credentials to establish inter-organizational ties	To be accountable for the fulfillment of the Responsibility for the fulfillment of the ethical and deontological norms
SK2	Credentials Determine the list of necessary clinical and laboratory and instrumental examinations and evaluate their results	The mother of a specialized knowledge about the methods of-procedures for performing laboratory and instrumental investigations	Know how to analyze results laboratory and instrumental methods of investigation	The credentials you need to bring patient and physicians to the findings list and results research	To be responsible for responsibility for the correctness and timeliness of the performance of the-correctness and punctuality of the performed investigations and interpretation of their results.
SK3	Credentials set anterior and	Know the sequence of	Know how to perform	Credentials to establish	Responsibility for the correctness of

	clinical diagnosis disease	application of methodology objective examinations ophthalmologic patients.	all regulated examination methods in the appropriate post-adequately and evaluate obtained results	contact with the patient during objective examination	the Responsibility for the correctness of the-correctness of performance and interpretation of the results, results when performing an interactive examination of the patient
SK4	The validity of the principles treatment diseases, necessary regimen of work and rest and the nature of food	Maintain knowledge about clinical course disease. Mother knowledge about organization of com-formative stay of the patient. patient's stay in hospital and rules of-rules for maintenance of vital needs of the organism.	Know how to vibrate and use appropriate scale to evaluate clinical progression disease. Maintain skills in the care of the patient in the conditions of hospital, be able to identify and evaluate general condition patient and his or her basic parameters of his or her vital signs.	Use information and Communications technologies in professional activities. Efficiently form-to formulate the communication strategy in contact with the patient, to bring information to the appropriate documentation	To be responsible for the Responsibility for interpreting interpretation of the obtained results when Evaluating the clinical disease progression, for immediate evaluation patient's condition, for timely and proper taking measures for the supervision of the patient.
SK5	Credentials diagnose unreliable conditions	Maintain knowledge about clinical manifestations and stages of development acute medical	Know how to identify and diagnose quickly. and diagnose Severe medical conditions. able to organize their activities and diagnose acute medical conditions quickly and know how to administer their treatment. organize and provide the appropriate diagnostic programm	Use community strategies. Skills inter-organizational interaction	To be responsible for responsibility for the immediate detection and evaluation of an unimpaired medical condition in patient
SK6	The strength of to determine the tactics tactics and to give	Mother of specialized-knowledge about medical	Know how to sequence and correctly perform-Take first-aid	Use community strategies. skills	Responsibility for the correctness and consistency provision of first



	urgent medical aid	emergencies; know algorithms of giving-medical aid; know the algorithms for providing first-aid medical aid	measures in sequence and correctly medical aid in accordance with the unhealthy-unhappy condition that	inter-organizational interaction	medical aid
SK 8	Credentials to perform medical manipulations	Mother of specialization. knowledge of ana volumes and normal- Physiology of the eye organ- eyesight. Knowledge of algorithms of medical medical procedures and mani-manipulations: (examination of the con-conjunctivitis con-junctiv- lytic defects cavities and slozo- lary tires, lac-filling of cripples, application of ointment, turning of the upper of the upper lobe; revision: Sight gauges, field of vision by the control method, intraocular blood pressure, sensitivity ciliary horn painfulness)	Being able to perform medical procedure or perform medical manipulation in accordance with the algorithm. According to the algorithm	About formulate and to communicate to the patient opinions on the need for to carry out these or other medical procedure or manipulation	To be responsible for the quality of the production. Responsibility for the quality of the wine execution of that or other medical procedure or manipulation
SK12	The strength of to determine the tactics management of individuals who are subject to dispensary observation	Mother specialized knowledge about people, their organizations and systems; knowledge of of the health status	Know how to be able to model the The simulated clinical and organizational-organizational situation on the basis of data about the disease	Organize Interaction with family physicians outpatient clinic, specialists Policlinics	Carry Responsibility for responsibility for the validity of decisions on dispensary observation.

		patient's health condition based on based on standard schemes; Knowledge of of the relevant ethical and legal norms health examinations population	and its course, to determine the presence and severity impairments of the disease and its course, type, degree and duration of disability. disability.		
SK 13	Credentials carry out of workability	Mother specialized knowledge about people, their organizations and systems; knowledge of of the health status patient's health condition based on based on standard schemes; Knowledge of of the relevant ethical and legal norms on expertise Invalidity	Know how to design accordingly documents, which time inactivity	Organize Interaction with with the head of the LCC division, ICEC	Carry Responsibility for responsibility for the validity of decisions on medico-social expertise employment.
SK14	Credentials to conduct medical documentation	Know the system of the official document-documentation in the pro-professional work physician, including up-to-date computer technologies	Know how to identify source and location location of in required information in Depending on their type; be able to process-information and analyze received information received	Receive necessary information from designated source and on the basis of On the basis of their analysis form appropriate conclusions	Carry Responsibility for completeness and quality analysis of information and conclusions on the basis of On the basis of their analysis.

- **Programmatic results of teaching the discipline:**

PRN 1 Teach the skills of communication and clinical examination of the patient. Collect data on the patient's history, history of disease, life history.

ROL 2 Evaluate information about the diagnosis using a standard procedure, based on the results of laboratory and instrumental examinations. Establish a list of necessary clinical and laboratory and instrumental examinations and evaluate their results (according to the list 4 of the RDS).

PRN 3 Identify the leading clinical symptom or syndrome (list 1) of OPD. Establish the initial diagnosis, perform differential diagnosis, and determine the clinical diagnosis of the disease (under list 2 of the UTIs).

GP 4 Determine principles of treatment of diseases, work and rest mode, nature of nutrition (according to the list 2 of OPP).

PRN 5 Diagnose non-malignant conditions (per RPN list 3).

RN 6 Administer tactics and emergency medical care (RPM list 3). ROL 8 Administer medical manipulation (RPM list 5).

GP 12 Determine management tactics for patients subject to dispensary supervision (children, pregnant women, employees whose professions require mandatory supervision).

RN 13 Carry out performance appraisal. RN 14 Maintain medical records

PRN 17 Plan, conduct and analyze activities to organize and integrate the provision of medical care to the population.

PRN 18 Adhere to ethics, bioethics and deontology in their professional activities

***Integrative and innovative curricula for learning outcomes***

***formation of which The educational discipline contributes to the formation of these programs:***

- ability to carry out professional activities in a socially responsible manner
- ability to identify the future professional activity as socially important for human health;
- ability to use knowledge and understanding of the subject area and understanding of the profession;
- The ability to display knowledge in practical situations;
- Ability to use the results of self-directed search, analysis and synthesis of information from different sources to solve typical tasks of professional activity;
- Ability to argue information for making decisions, to be responsible for them in standard and non-standard professional situations;
- Understanding and adhering to the principles of deontology and ethics in professional activity;
- Understanding of sanitary and epidemiological regulations and safety requirements for professional activities;
- Understanding of self-regulation and maintaining a healthy way of life, ability to adapt and act in new situations;
- Ability to understand the choice of communication strategy, skills of interpersonal communication;
- ability to comply with the standards of communication in professional interaction with colleagues, management, work effectively in the team;
- The ability to communicate effectively, to formulate and solve tasks in a native language both verbally and in writing;
- Ability to use some information and communication technologies;
- ability to analyze and evaluate the results of the study, age, sex, and individual features of the human body, the clinical anatomy of parts of the human body, organs and other anatomical structures;
- Collect, interpret relevant data and analyze the complexity within the scope of specialization in order to report judgments on social and ethical problems;
- Understanding of the desire to preserve the natural environment;
- ability to demonstrate modern level of knowledge of professional subjects in ophthalmology in relation to solution of medical problems;

## **Results of teaching the discipline:**

### ***The nobility:***

- Modern concepts of domestic and foreign theoretical and practical ophthalmology;
- Basic principles of organization of ophthalmologic aid to Ukrainian population;
- The basis of the organization of the rational regime and treatment of ophthalmologic patients;
- The following are the general elements of the care of patients with ophthalmopathy;
- Theoretical aspects about ophthalmologic instrumentation and methods of its use;
- Theoretical aspects of prevention of occurrence and dissemination of intra-ocular ophthalmic infections;
- Classification, clinical manifestations, consequences of ophthalmologic diseases, methods of rendering quick specialized aid;
- Fundamentals of Snebolyvannya v ophthalmologii;
- Diagnostics of inflammatory diseases of the articular shell of the eye, clinical manifestations, differential diagnosis, peculiarities of treatment;
- tactics of glaucoma detection, clinical manifestations of different stages, their diagnosis, and measures of conservative and surgical treatment;
- General traumas of the eye and its appendages
- Riddle of ophthalmology-oculology;
- Riddle of the ophthalmologic manifestations of VLL infection;
- Clinic, diagnosis and treatment of suppurative and inflammatory diseases of the appendages of the organ of vision, conjunctivitis and cornea;
- methodology of the examination of the patient, peculiarities of the examination of the patient with ophthalmopathy;
- Peculiarities of the structure of the medical picture of a hospitalized patient.

### ***Skill:***

- Organize appropriate sanitary and epidemiological conditions for different rooms of the ophthalmology department;
- conduct anamnesis collection and physical examination of an ophthalmologic patient;
- Choose an appropriate anaesthetic technique for the procedure;
- diagnose various traumatic damages to the visual organ and its appendages;
- Provide first-aid treatment for all kinds of traumatic injuries to the visual organ and its appendages;
- to choose the tactics of postoperative management of an ophthalmic patient depending on the surgical treatment;
- To diagnose various inflammatory and noninflammatory processes of the visual organ and its appendages, to carry out differential diagnostics between them;
- Choose the appropriate surgical tactics for different stages of the development of lesions of the visual organ and its appendages;
- To make a program of conservative treatment of various inflammatory processes of the organ of vision and its appendages;
- To draw up an inpatient card for a patient with ophthalmopathy;
- To comply with ethical, bioethical and deontological standards in their professional activities.

## 2 The scope of teaching discipline

90 years, 3 credits.

### Informational scope of the teaching discipline.

#### Ophthalmology.

##### ***Divided:***

- *Clinical anatomy, physiology, methods of examination of the organ of sight and its appendages.*
- *Diseases of the appendages of the organ of vision.*
- *The disease of the eye.*
- *Non-critical support in case of diseases of the eye organ and its appendages.*

The credit system of the educational process organization encourages students to study systematically during the academic year.

Types of educational activities according to the curriculum are:

a) lectures; b) practical exercises; c) students' self-study; d) consultations.

The telecourse is designed to address the problems in the relevant sections of ophthalmology.

Practical exercises for the methodology of their organization is clinical, for:

- Mastering the methods of instrumental examination of the visual organ and its appendages;
- Investigation of impaired functions of the diseased person's organ of vision;
- Establishment of the diagnosis, based on the summarization of the received data;
- The recognition of an adequate course of treatment for the disease in question;
- solving "Krok-2" tests, situational tasks.

Clinical practice consists of the following stages. Preparatory stage of the lesson is composed of checking the presence of the students and determining the theme and structure of the lesson. The main stage includes determining the outstanding level of knowledge of students and discussion of the main issues of the lesson. This part of the lesson accounts for about 20% of the lesson. After that, the students under the direction of the teacher conduct supervision 3-4 cases, indicating the necessary practical skills. At the end of the lesson the teacher verifies the students' mastery of the material of the practical exercises, conducts correction of the level of knowledge and skills. During the course of the discipline students independently conduct the supervision of the patient and write a history of the disease, which protected at the advanced session.

***In the course of training students*** is controlled by practical exercises in accordance with the specific objectives. Such means of diagnostics of the level of students' training are used: computer tests, solving situational problems, supervision of thematic diseases, interpretation of laboratory data and special studies that characterize the functional state of the vision, control of practical skills, and others.

***A summary control*** is carried out upon completion.

Assessment of student success in the discipline is a rating and is presented as an arithmetic average assessment of the cycle and is determined by the system of ECTS and the traditional scale, adopted in Ukraine.

Completion of the Discipline Plan  
summary control (referencing report).

Students are required to compile a

### 3. Structured teaching plan for the discipline "Ophthalmology"

Structure of the educational discipline	Number of years, of which		CPC	Year of study	Type of control	
	Totally one year/credit.	Auditorium				
		Lectures				Occupy.
Ophthalmology	90	8	22	60	4	Current and differentiation hall
<i>Totally:</i>	90	8	22	60	4	Current ta discrimination hall

Note: class workload - 30%, RTS - 60%

#### PLANNING OF PROGRAMME

##### Ophthalmology

Topics in the discipline "Ophthalmology", which are required to master the students:

- History of ophthalmology. Anatomical and functional peculiarities of the organ of vision. Methods of investigation.
- Functions of the organ of vision (gostrity of vision, field of vision).
- Refraction and acomodation of the eye. Squint.
- Disease of horns, lacrimal organs, orbitals.
- Conjunctivitis.
- Cornea and sclerae diseases. Diagnostics, treatment.
- Disease of the cranial membrane.
- Pathology of the crystalline and sclovid body. Peculiarities of ophthalmic surgery. Curation.
- Glaucoma. Methods of internal pressure testing.
- Visual impairment. Unnecessary assistance.
  - Progressive and radical decrease of eyesight. Diseases of the optic nerve and the optic nerve. Changes in the organ of vision in common diseases. History of the disease.

##### **Specific objectives:**

- To analyze the main stages of development of Ukrainian ophthalmology.
- Explain the anatomical peculiarities of the structure of the organ of vision.
- Explain the peculiarities of functions of the visual organ. To be able to determine gastricity of vision, field of vision, dark adaptation, color vision. To be able to determine the stage of examination of patients with pathology of the visual organ, medical documentation.
- To detect refraction and acomodation of the eye.
- To give sanitary and hygienic recommendations for refraction abnormalities.
- Evaluate the changes in the state of lips, conjunctivae and lacrimal organs in normal and pathological conditions.
- To analyze the peculiarities of clinical course of orbital diseases.
- Provide emergency aid in case of acute inflammatory processes of the orbit and appendages of the eye.
- To be able to identify the nature of disorders in the ocorchial apparatus of the eye, the stage of treatment of children with obliquity.
- Know how to assess the status of the in-person heater

- Interpret the data received during the biometric illumination of the horn, anterior chamber of the eye in norm and in pathology
- Interpret the biomicroscopic data of cornea, anterior chamber, rygdus, cristal body, sclavicular body, in normal and pathological conditions
- To be able to provide urgent help in case of acute keratitis, corneal eruption, iridocyclitis, uveitis.
- Know how to diagnose cataract and how to treat it.
- Know how to interpret the internal pressure level.
- Be able to establish the diagnosis of glaucoma and the order of care.
- Be able to explain the changes on the side of the skeletal and optic nerve in the case of repeated loss of optic function.
- Be able to interpret the changes in the side of the visual organ in case of general diseases of the body (diabetes, atherosclerosis, hypertonic disease).  
Know how to provide emergency assistance when:
  - (a) To the outside body of the conjunctivi,
  - b) to the side of the horn's body,
 Know how to provide emergency assistance when:
  - Chemical, thermal injuries of the eye, penetrating wounds,
- To be able to determine the stage of examination and treatment of patients with organ of vision pathology, conduct preventive measures and clinical examination of patients, medical and social expertise.

### **Theme 1. HISTORY OF OPTALMOLOGY<sup>2</sup>İ. ANATOMICAL AND FUNCTIONAL FEATURES OF THE VISUAL ORGAN. METHODS OF INVESTIGATION.**

Basic diagnostic methods. Sight. The notion of normal and pathologic organ of vision. Achievements of modern ophthalmology. The subject of ophthalmology and its place among o t h e r medical disciplines. Overview of development of ophthalmology (Helmholtz, Grefe, Elshnig, Donders). History of domestic ophthalmology, its results in folk medicine of Kievan Rus. The first full-time clinics. Founders of Russian ophthalmology - E.V.Adamjuk, L.G.Bellyarminov, L.L.Hirschman, V.I.Dobrovolsky, A.N.Dobrovolsky. Dobrovolskiy, A.N. Maklakov. Further Development of the Russian ophthalmology (A.A.Kryukov, S.S.Golovin, V.P.Filatov, I.Y. Merkulov, A.I. Dashevsky, N.O. Puchkovskaya and others).

Ocular morbidity: structure, level, dynamics of incidence of conjunctivitis, keratitis, inflammation and dystrophy of the articular tract and sutures, obliquity, progressive myopia, puffiness. Frequency, geography, seasonality, timing and causes of eye damage, occupational pathology of the eyes. Differences in the structure and level of ocular pathology in children and adults.

Orbit structure: orbital tissue, nerves, corpus callosum, orbital cartilage, place of their beginning and attachment, innervation, functions. Tenon capsule, tenonovy space, their value. Tarso-orbital fascia, their significance.

Main causes of decreased vision in people of different age and status. Issues of extreme ocular pathology.

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

Visual sensory system (visual analyzer, its head and auxiliary structures). Main structures (light sensing and analyzing apparatus, photoreceptors and receptor neurons, zoral nerves, external parts of the body, zoral zones of the measles). Additional structures (orochial apparatus and light-conducting apparatus).

Ocular heel, its external capsule - sclera, cornea. Peculiarities of cornea structure, its innervation, living, functions (light and gas and protection).

Cardinal membrane and its three divisions: thyroid, thyroid body, chorioidea. Raytheon, its structure, functions, blood supply, innervation. Ciliary (ciliary) body, the ciliary appendages, structures and functions (formation of intraocular radii). Acomodic mesa, its peculiarities and innervation. Chorioidea, its structure and interaction with the suture. Two systems of blood supply of the articular membrane, their role in the initiation and spread of inflammatory processes.

Sittivka, its zoro-nervous elements (cones and palicles). Gum tissue, peculiarities of its structure. The gastrointestinal act. Theory of vision. Basic elements of the zoral act: light sensation, peripheral vision, formal vision, binocular vision.

The zologic nerve as an extension of the intramural ball of the skeleton, partial overhang (chiasma) of the zologic nerves, the zologic tract, the subcortical zologic centers, the zologic centers of the cerebral cortex.

Contents of eyeball and eye chamber. Cristal girdle, functions (illumination and accommodation), peculiarities of its structure, living. Cynic ties (vykovyki belt). Squamous body. Front chamber, its volume. Intraocular space, its composition and role in the intraocular exchange. Knot of the anterior chamber (ryduzhno-horny), fountain spaces. Schlemm's canal (venous sinus sclera). Posterior chamber. Ways in which the intraocular rudiments. Influence of central nervous system through vasomotor and trophic apparatus on intraocular metabolism.

Orbital fossa, orbital walls. Orbital fossa openings: zologic branch (zologic nerve, optic artery), upper orbital cervix (orbital nerve, intraorbital nerve, block nerve, first ridge of triple nerve), lower orbital cervix. Relationship of the orbit to the accessory nasal sinuses and cranial cavity

## **Theme 2: FUNCTIONAL ORGANIZATION OF ZORO ("ZORO HEADQUARTERS", "ZORO FILES")**

Examination of central vision. Visual acuity, unit of measurement, cube of vision. Magnitude of the minimum couture. Principle of making tables for gostrotresight measurements. Determination of good eyesight with the help of a table. Role of the optical system of the eye.

The study of color vision. Color and its main signs. Conditions necessary for recognition of colors. Trichromatic normal human eye. Dichromasia. Explanation of the dichromatism errors. Diagnosis of dichromatism. Polychromatic tables.

Peripheral vision examination - fields of vision. Normal borders of the visual field, physiological scotoma. Methods of visual field detection: control, perimetry, cammimetry. Concentric sounding of the visual field. Sectional defects, half loss of the visual field of both eyes (hemianopsia), limited defects in the visual field (scotoma). Types of scotoma (central, peripheral, adverse, absolute, negative, positive).

The examination of the subjective vision. Portion of recognition and portion of subdivision, their noninstancy. Adaptation. The theory of subviability of vision. Adaptation curves. Hemeralopia. Methods of hemeralopia detection. Purkin'e phenomenon and method of S.V. Kravkov. Hemeralopia is symptomatic and sessential, its connection to general state of organism, professional and everyday conditions.

Fluorescence angiography. Methods of carrying out. Assessment of chorioidal, arterial and venous phases.

## **Theme 3. REFRACTION THAT ACCOMMODATION OF THE OCA. COSMODATION.**



Theory of refraction. Optical eye system, its components. The unit of refraction measurement - dioptre. Understanding of the physical refraction of the eye and the historical dynamics of their development. Current and subjective methods of clinical refraction determination. Relation of clinical refraction to the optical medium tensile strength and eye length. Clinical refraction and its variety: metropia, miosopia, hyperopia. Astigmatism. Methods of examination. Notion of spirosmal and non-spirosmal refraction (emetropia, ametropia, anisometropia). Vokovaya kharakterizatsiya i pitoma vaga razlichnykh vyrofil'nykh refraktsii.

Emetropia, its clinical characteristics, spread, methods of recognition.

Hypermetropia (far-sightedness). Time dynamics, expansion. Specific features of optical correction of hyperopia.

Myopia (short-sightedness). Characteristics, age dynamics and prevalence. Congenital and progressive short sight. Changes in the eye membranes during progressive short-sight. Pathogenesis, classification, role of irrelevant factors. Principles of medical and surgical treatment. Prophylaxis. Optimal ocular correction, contact correction, refractive surgery with an excimer laser.

Astigmatism. Characteristics, expansion, and age dynamics. Types of astigmatism, methods of its recognition. Peculiarities of skeletons used for the correction of astigmatism. Contact lenses.

Acomodation. Convergence and its role in accommodation. The length and volume of accommodation. Age-related changes in aocomodotion. Spasm and paralysis of accommodation, and their causes. Diagnostics of spasm of accommodation and its prevention. Zorová vtoma (asthenopia) and methods of treatment. Presbyopia and its treatment depending on the exemplary clinical refraction and age. Hygiene of the healthy work in the child and abnormal age.

Investigation of binocular vision. Binocular vision and its essence. The concept of adequate and inappropriate points of view. Physiological undercutting. Conditions of glib vision. Role of cerebral cortex in stereoscopic vision. Scheme of work of the corpus callosum. Fixation and fusional movements of the eyes. Training of the fusion reflex. Estimation of the depth, the oocyre. Methods of binocular vision identification: installation hand, test with the help of two tints, examination with "lavior at the pillar". Impaired binocular vision.

Changes in the orbital apparatus that occur most often. Deterioration of the binocular vision. Apparent and near obliquity. Cochlear and paralytic obliquity. Principles of treatment of conjugal and paraplegic obliquity. Prophylaxis of obliquity. Nystagmus, causes of occurrence, principles of treatment.

#### **Theme 4: Diseases of POVERTY, Tears, Orbital organs**

Blepharitis, barley, halazoon, abscess, phlegmon of the eyelids. Lesions of neuromuscular apparatus of the uveae. Ptosis, lagophthalmos. Natural anomalies (coloboma of the horns, anchyloblepharon, twisted, twisted horns, epicanthus, ptosis). Diseases of hoppers caused by demodechosis (peculiarities of clinical picture, diagnosis, treatment and prophylaxis).

Novo-uthornization of the worms (benign, malignant). Indications for surgical treatment, craniodestruction, promeno therapy, diathermic coagulation and chemotherapy.

Congenital anomalies of the lacrimal gland. Dacryoadenitis. Etiology, treatment, diagnosis methods, treatment course, complications. Principles of treatment. Sjögren's syndrome (syndrome of "dry" eye when lacrimal and other eczocrine glands are affected). Pathogenesis, stages of clinical course, the consequences. Methods of diagnostics and therapy. The role of a general practitioner in simultaneous diagnosis and complex treatment of

Sjögren's syndrome. New lacrimal gland inoculation (adenocarcinoma). Clinic, course, methods of diagnostics, treatment, prognosis.

Congenital and induced changes of the lacrimal ducts. Absence or dislocation of lacrimal points, sounding or obliteration of lacrimal ducts, lacrimal sac diverticula, stenosis of the lacrimal duct. Methods of diagnostics, principles and term of operative treatment.

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

Chronic dacryocystitis. Clinic, causes, treatment, complications. Methods of treatment. Prophylaxis.

Dacryocystitis gastricus (phlegmon of lacrimal sac). Clinic, course, consequences. Principles of treatment and prophylaxis.

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

Sustained orbital diseases: Osteoperiostitis, orbital phlegmon, hepatic sinus thrombosis, related to dental and maxillary system disorders (acute and chronic periodontitis, Periosteal granuloma, osteomyelitis of the cheeks, phlegmons and abscesses of the cheek-facial area and neck, furuncles or carbuncles of the face, facial bruises).

Pathways of infection spreading to the orbit (by venous and lymphatic vessels, hematogenous and metastatic pathways). General symptomatology, which is characteristic for inflammatory process in the orbit.

Methods of diagnosis of inflammatory diseases of the orbit, treatment and relapse.

Newly developed osseous fossa. Benign tumors (bones, dermoides, angiomas, osteomas). Malignant tumors (sarcoma, carcinoma). Use of radiography, computerized

tomography, magnetic resonance imaging, venography, carotid angiography, thermography in the diagnosis of orbital plaques. Peculiarities of the clinical course. Methods of treatment.

### **Theme 5: CONJUNCTIVITY CONNECTIVES**

Conjunctivitis. Acute conjunctivitis, scarring, vision, conjunctivitis appearance, conjunctival inactivation of the eyeball and the difference in pericorneal. Etiology. Methods of treatment. Prevention of Conjunctivitis in Children's Institutions. Epidemic conjunctivitis caused by Koch-Uyksa pathology. Methods of mass prophylaxis, sanitary hygienic measures. Peculiarities of diagnostics of acute conjunctivitis (diprobacillary, pneumococcal, diphtheria) and treatment.

Gonoblenorrhoea in infants and children. Its prevention and treatment. Effects. Treatment is general and local.

Viral conjunctivitis (herpesvirus, adenovirus). Peculiarities of diagnostics and treatment. Korean and invasive conjunctivitis: diagnosis, clinical course, treatment and prophylaxis.

Chronic conjunctivitis. Necessity of detection and elimination of chronically acting factors. Chronic conjunctivitis as a professional pathology and their prevention in industry and agriculture. Trachoma. Definition. Etiology. Pathogenesis. Four stages of trachoma development. The consequences. The complications. Paratrachoma. Etiology. Pathogenesis, specific features of diagnosis and treatment. Differential diagnostics with folliculosis and follicular conjunctivitis. Treatment: medicamentous, surgical, general. Treatment of complications. Prevalence and epidemiology of trachoma and paratrachoma. Fight against trachoma in Ukraine.

Dystrophic changes of conjunctivitis (crylopedibial plaque, pinguecula). Indication for surgical treatment.

Puffiness of conjunctivitis. Benign (dermoide, papilloma), malignant (melanoma, cancer). Indications for promeno therapy, diathermic coagulation, surgical treatment.

## **Theme 6. CURVENTION of the coronary arteries. DIAGNOSTICS, TREATMENT.**

Keratitis of exogenous origin. Infectious keratitis of bacterial origin. Corneal wounds. Conditions of occurrence of the worm disease process in the cornea. The secondary cornucopia. Clinic, treatment, consequences. The role of chronic dacryocystitis. Treatment. Prophylaxis: dacryocystinostomy, protection of eyes of the worker.

Keratitis of viral etiology. Adenovirus keratoconjunctivitis. Clinic. Treatment. Local and general treatment. Epidemiology. Prophylaxis. Keratitis caused by conjunctivitis, membranes and meibomian (tarsal) glands. Treatment. Prophylaxis. Catarrhal keratitis during acute conjunctivitis. Prophylaxis, treatment.

Endogenous keratitis. Infectious keratitis. Keratitis with congenital syphilis (parenchymatous). Clinic. Cyclicity of the course. The consequences. Causes of occurrence. Symptoms of congenital syphylitis. Serologic characteristics. Specific, general and local symptomatic treatment.

Tuberculous keratitis. Hematogenic tuberculous keratitis . Pathogenesis. Clinic. General treatment: specific complex, desensitizing, general stimulation, local treatment: symptomatic and specific.

Tuberculosis-allergic keratitis. Clinic and treatment. General state of the child's organism. General treatment: specific, desensitizing and general treatment. Local treatment: specific and symptomatic. Prophylaxis of tuberculosis lesions of the eye.

Neurogenic keratitis. Neuroparallitic keratitis due to triple nerve damage. Specific features of the clinical picture - absence of sensitivity, areactivity of the eye. Herpetic keratitis. Clinic of various forms. Persistence. Consequences. Theories of pathogenesis. Treatment. Keratitis of the operative lich. Clinic of lesions of the cornea, the skin and the general state. General and local treatment.

Fungal hornworm lesions. Clinic, course, peculiarities of diagnostics. Specific methods of treatment.

Avitaminous keratitis. Corneal lesions in case of avitaminosis A. Prexerosis. Xerosis of the cornea.

Keratomalacia. Clinic. Treatment. Treatment. Prevention.

Horn Dystrophies. Primary dystrophies: Grenouve's degeneration, Fehr's degeneration, Decisive Dystrophy of Dimmer, Epithelial Dystrophy of Mesmann, degeneration of Schnider's horn, familial mottled dystrophy of Francois. Secondary dystrophies of cornea. Causes of occurrence, peculiarities of treatment and treatment.

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

Sclera novoutvoreniya, diagnostics, treatment.

## **Theme 7. CHALLENGE OF THE WOMAN COLLECTION**

Frequency of articular insufficiency among general personal pathology. Severe consequences of diseases of the articular tract as a cause of weakness and blindness. Structure of diseases of the articular cover: inflammatory and dystrophic processes, new developments, congenital anomalies.

Inflammation of the articular tract (uveitis). The most frequent causes of uveitis in people of different ages. Pathogenetic mechanisms of uveitis development: infectious-metastatic and toxic-allergic. Classification of uveitis by its duration, localization, clinical and morphological picture, etiology, immunologic status. The main morphological, functional signs and mechanisms of uveitis (iritocyclitis, chorioiditis, panuveitis). Features of the age of transition and the consequences of uveitis. Differentiated diagnosis of diseases of the joint tract depending on their etiology of clinical, laboratory (need for additional methods of

investigation: X-ray, electrophysiological and immunological) picture (influenza, collagenosis, viral, tuberculosis, syphilitic, toxoplasmosis, focal and others.). Organization, principles, methods of general and local treatment of anterior and posterior uveitis, depending on the etiology and nature of the process. The consequences. Prophylaxis.

Dystrophic diseases of the rydukha and the body. Causes of occurrence. Forms (chronic ciliary body dysfunction, Fuchs syndrome). Differential diagnosis with uveitis anterior. Clinic, treatment course, principles of treatment.

Anomalies of articular membrane development (ryductal coloboma, corpus luteum coloboma, chorioidea coloboma, aniridia, policoria, choriodermia, albinism, zalishkovaya zinicheskaya membrane).

Newly developed judicial shell. Benign tumors (cysts, nevi, neurofibromas, neurinomas, leiomyomas). Peculiarities of treatment, principles of treatment. Malignant tumors (melanoma, melanosarcoma). Diagnostics. Indications for surgical and laser treatment.

### **Topic 8. PATHOLOGY OF THE CRYSTALLIC THROUGH BODY. PECULIARITIES OF OPHTHALMIC SURGERY. CURATISATION.**

Congenital and abutting cataract (old age, secondary, disordered, traumatic), its development, pathogenesis, classification. Signs of cataract maturity. Methods of treatment. Indications for the operation.

Aphakia, methods of correction.

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

Congenital sclavicular body pathology (primary hyperplasia, gialoideal arterial lumps).

Diagnostics, treatment. Sclovid body pathology (hemorrhage, destructiveness, side bodies).

Diagnostics, modern methods of treatment.

Peculiarities of current ophthalmic surgery. Requirements for ophthalmic surgical equipment, instruments and suture material. Varieties of full face implants. Indications for planned and urgent surgical interventions.

### **Topic 9. GLAUKOMA. METHODS OF INTERNAL PRESSURE INVESTIGATION.**

Definition and cardinal symptoms of glaucoma. Classification. Significance of the state of the cardiovascular and nervous system in the onset and the course of glaucoma. In Vitrocutaneous and

Closed-angle glaucoma (diagnosis, clinical course). Gostric attack of glaucoma. Scars. Local and general symptoms. Treatment. Effects of the treated and uncontrolled acute attack. Differential diagnosis with acute iritis. Untreated treatment: conservative general and local. Indications and terms of surgical treatment. Differential diagnostics of glaucoma with initial senile cataract. Treatment. Treatment: regime of hypotensive drops, indications for surgical and laser treatment, principles of surgical treatment. Regime of a glaucoma patient. Dispensary treatment.

Natural glaucoma (etiology, pathogenesis), specific features of glaucoma treatment.

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

Glaucoma in the Consequence of Glaucoma. Prevention, methods of early diagnosis of glaucoma.

Active detection of glaucoma patients. Dispensary treatment of glaucoma patients.

### **Topic 10. VISUAL IMPAIRMENT. EMERGENCY AID.**

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

Concussion of hogs. Bleeding under the skin of the horns, their sources. Subscapular emphysema. Contusions of the temporal heel: cornea impingement, sclera, rayduzhki,

subconjunctival sclera urosplift, scleral body impingement, bleeding in the sclavic body, impingement of cricholion (traumatic cataract), suture, suture and lacerations of suture, zorovoy nerve impingement. Symptoms and methods of diagnosis. Treatment of the consequences of contusions of the eyeball and appendicular apparatus of the eye.

Sides bodies of the conjunctival cavity and horn. Methods of detection, identification.

Penetrating wounds of the eye, absolute and intrinsic signs of penetrating wounds of the eye. Principles of granting specialized aid, complications. Dispensary treatment.

Optics of the eye and its appendages. Symptoms and clinical course of optics of eyelids, conjunctivitis, corneas in acid, irradiation and thermal optics. Optics prosthetic energy (ultraviolet, infrared, X-ray, ultrasonic imaging). First aid. Treatment pathogenetic, symptomatic, pharmacological, surgical. Complications and modern methods of treatment.

Occupational injuries of the eye. Eyes traumatism in industry, its causes, nature, measures to combat it. Peculiarities of agricultural eye injuries. Organization of self- and mutual aid and delivery to the specialist. Injury to the eyes in the chemical industry. Causes, methods of struggle against it.

Occupational eye diseases. Action of the mechanical saw on the eyes, conjunctiva, horn. Consequences of the constant exposure to chemicals and reagents without direct contact with the eyes and as a result of general intoxication. Occupational eye disease as a result of the constant dose of promenitic energy. Principles of organization of fight against eye injuries: sanitary and technical, individual protection.

#### **Topic 11. POSTOPERATIVE AND RECEPTIVE DECREASES IN VISION. SIGHT AND OPTIC NERVE DISEASES. CHANGES IN THE ORGAN OF VISION DURING GENERAL DISEASES. THE HISTORY OF THE DISEASE.**

Gostra neprohidnost' of central vein of sittiqua and its hilok. Clinic, diagnosis, treatment. Nevidkladna aids. Prognosis, consequences. Central artery embolism, peculiarities of clinical course, diagnosis, treatment, emergency treatment, prognosis and consequences.

Sickle cell disinfection. Etiology, pathogenesis, peculiarities of ophthalmological picture. Terms and methods of surgical interventions. Application of modern methods of treatment . Role of photo- adlaser coagulation in prophylaxis and treatment of retraction. Implications.

Newly diagnosed retinoblastoma. Peculiarities of clinical course, ophthalmoscopic picture of retinoblastomas. Modern methods of diagnostics and treatment.

Dystrophies of cell in germplasm (spastic, age-related). Pigmentary dystrophy of socket.

Changes in heart and cardiovascular diseases (hypertonic and hypotonic heart disease, atherosclerosis).

Changes in vision in blood diseases (leukemia, malignant anemia), toxicosis of pregnant women, liver diseases, in patients with STD.

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

Iridodiagnostics as a method of evaluation of constitutional possibilities of organism reaction to pathologic process.

Classification and prevalence of diseases of the zologic nerve in adults and children.

Optic nerve inflammation (neuritis). Papillitis and retrobulbar neuritis (etiology, treatment), peculiarities of diagnostics. Emergency treatment. Principles of treatment. Consequences.

Acute and chronic poisoning (methyl and ethyl alcohol, lead, quinine, narcotic substances, plutonium), peculiarities of clinical course. Emergency treatment, consequences.

Zoronic disc of the zoric nerve. Causes of development, stages of development. Features of each stage. Differential diagnostics of neuritis of the optic nerve. Specific features of treatment.

Chiasmatic inflammation (chiasmitis, optico-chiasmal arachnoiditis). Clinic, diagnosis, treatment. Diseases of the zoral tract. Role of examination of the field of vision in the diagnosis of diseases of chiasmia and zoral tract.

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

Medical examinations of full-time illnesses. The determination of the time loss of employment and its terms, as well as a permanent disability in connection with the profession. Determination of the severity of invalidity.

Simulation, agravation, dissimulation of zonal functions. Subjective and objective methods of their detection.

Requirements for the inspection body at the time of selection to the Ukrainian army units. List of diseases that interfere with eligibility and define ineligibility for military service.

Organization of ophthalmologic care for the elderly and children. Characteristics of the medical system: full-time clinics, interdistrict child welfare clinics, consulting clinics, full-time hospitals, dispensaries, trauma centers. Specialized full-time sanatoria, specialized full-time nurseries, sanatoriums and so on. Attempts to protect children's eyesight in pre-school institutions and schools.

Etiology, pathogenesis, clinical picture, methods of diagnosis and treatment of the patient to be treated. The conduct of differential diagnosis. Prognosis of the diagnosis and further management of the patient.

## Topic 12. DIFFERENTIAL HALL.

The student solves 2 test tasks such as "Crock - 2", answers the theoretical questions to them, and demonstrates 2 practical skills.

### Structure of the discipline "Ophthalmology":

No. n/a	Subject	Lectures	practical exercises	CPC	CDS Individual work, writing an essay
1	History of ophthalmology Anatomo-	0,5		3	
	Functional features of the body of the eye. Methods of investigation.		1	4	
			1	3	
2	Functions of the organ of vision (gostrotta vzor, field of zoro)	0,5	2	3	
3	Refraction and acomodation of the eye Oblique	1	2	4	
4	Disease of the wires, lacrimal organs, orbits	0,5	2	4	
5	Conjunctivitis.	0,5	1	3	
6	Cornea and sclerae diseases. Diagnostics, treatment.	0,5	2	4	
7	Disease of the cranial membrane.	0,5	1	4	
8	Pathology of the crystalline and sclavid body. Peculiarities of ophthalmic surgery.	1	2	9	

Prepare a review of scientific literature or carry out research on any topic -8

	Curation				
9	Glaucoma. Methods of examination WOT.	1	2	5	
10	Visual impairment. Unnecessary assistance.	1	2	7	
11	Progressive and radical decrease of eyesight. Diseases of the optic nerve and the optic nerve. Changes in the organ of vision in common diseases. A review of the history of the disease	1	2	7	
12	Differential Hall.	-	2	-	
	All at once	8	22	60	8

### Thematic plan of lectures

№	Subject	Number of years
1	<b>Introductory lecture. History of the Okhotsk Ophthalmological School. Physiology of the eye. Refraction and Acomodotion of the Eye.</b> (Achievements of the Odessa School of Ophthalmology. Functions of the eye at different ages. Presbyopia. Types of Clinical Refraction. Prophylaxis, methods of surgical and conservative treatment of ametropia).	2
2	<b>"Black Eye".</b> (Diagnostics and urgent aid, prophylaxis of inflammation of horns, slozovyh organs, conjunctivitis and orbits (barley, abscess of horns, dacryocystitis, conjunctivitis, periostitis, phlegmon of orbits). Diseases of the cornea, the judicial tract (keratitis, uveitis, endophthalmitis, panophthalmitis). Diagnostics and treatment. Prophylaxis).	2
3	<b>Progressive decrease of vision.</b> (Cataract: natural, inveterate (traumatic, disordered, secondary, old. Sight and optic nerve diseases. Newly diagnosed eyeballs. Changes in the organ of vision in common diseases. Diagnostics, treatment, prophylaxis).	2
4	<b>Glaucoma. Mechanisms of regulation, methods of examination of intraocular pressure. Classification, treatment and treatment of glaucoma. Eye organ impairment and dodactic apparatus of the eye. Non-critical care. Prophylaxis, dispensaries.</b>	2
	All at once	8

### Thematic plan of practical exercises

№	Subject	Number of years
1	Anatomical and Functional Peculiarities of the Visual Organ. Methods of investigation	2
2	Functions of the organ of vision (gostrity of vision, field of vision).	2
3	Refraction and acomodation of the eye. Squint.	2
4	Diseases of horns, lacrimal organs, orbits	2
5	Conjunctivitis	1
6	Cornea and sclerae diseases. Diagnostics, treatment.	2
7	Disease of the cranial membrane.	1

8	Pathology of the Crystalline Sclavicle . Peculiarities of the peculiarities ophthalmic surgery. Curation.	2
9	Glaucoma. Methods of internal pressure testing.	2
10	Visual impairment. Unnecessary assistance.	2
11	Diseases of the sittocurvature and the optic nerve. Changes in the organ of vision in common diseases. The history of the disease.	2
12	Differential Hall.	2
	All at once	22

### Types of students' self-study work (SSW) and its control

№	Subject	Number of years	Type of the control
1	<p>Preparation for practical exercises - theoretical training and practical skills;</p> <ul style="list-style-type: none"> <li>• Viznachati gostruta zoru;</li> <li>• Wiznachati pole zoru;</li> <li>• Enter the color;</li> <li>• Enact dark adaptation;</li> <li>• To detect clinical refraction;</li> <li>• Identify the acomodation and explain the changes;</li> <li>• To determine the changes in the position of the eyeballs in the orbit;</li> <li>• To be able to produce slozoproducts</li> <li>• To detect tear ducts and to carry out interpretation of the changes.</li> <li>• To be able to determine the obliquity: a/ By Hirschberg, b/ By means of the perimeter.</li> <li>• Perform examination of the cornucopia by means of optical illumination;</li> <li>• Examine the anterior chamber by means of the light beam;</li> <li>• To carry out examination of optical media of the eye in the light that passes;</li> <li>• To introduce a vibro sensitivity;</li> <li>• Care of an ophthalmologic patient <ul style="list-style-type: none"> <li>• Conduct an interpretation of the intra-intestinal blood pressure status using Maclakov tonometer, b/ palpatory.</li> <li>• Interpretation of the fundus (disc of the optic nerve, sockets, joints)</li> <li>• Interpretation of changes in the visual organ in common diseases;</li> <li>• To be able to interpret the changes of the visual organ in the case of new occurrences.</li> <li>• To be able to provide emergency aid in case of chemical, thermal injuries;</li> <li>• Know how to provide emergency aid for penetrating wounds;</li> <li>• Be able to interpret changes in vision and explain establishing the group of invalidity.</li> </ul> </li> </ul>	30	Instructional control in practical classes



2	Preparing a review of scientific literature or conducting research (individuated work).	10	screening
3	Those for self-examination: <ul style="list-style-type: none"> <li>• History of the development of ophthalmology.</li> <li>• Trachoma.</li> </ul>	20	control

	<ul style="list-style-type: none"> <li>• Changes in the organ of vision at avitaminosis.</li> <li>• Ophthalmoparasitosis.</li> <li>• Expertise in ophthalmology</li> </ul>		
	All at once	60	

#### 4. List of Materials for Preparing Students for Differentiating Room

##### *List of Questions to Prepare Students for Differentiating Room*

- The visual analyzer, its importance in cognition of the outside world.
- History of development of ophthalmology. Leaders of Ukrainian ophthalmology. Odessa school of ophthalmology.
- Achievements of modern ophthalmology. Vitality of ophthalmology: V.P. Filatov, I.J. Merkulov, N.O. Puchkovska, M.L. Krasnov, M.M. Krasnov, S.M. Fedorov.
- The concept of absolute, professional and public blindness. The main causes of blindness. Prevention of blindness in adults and children.
- Formation of zoological images. The role of the cerebral cortex in the act of sight. Theories of the act of sight.
- Horn. Ī structure, blood supply, properties and functions.
- Rajjuka. Ī structure, blood supply, properties and functions.
- The body and chorioidea. Ī structure, functions.
- M'yazi ryduzhki tak vyjkovoj tseli. Sitykivka, its structure, functions of the palychok and kovbochek.
- Anatomy of zoral nerve, peculiarities of its structure and topography.
- Krishtalik. Its functions, life, properties.
- Bloodletting of the full-time yabloko.
- Structure of the orbit and its size.
- The tensile forces of the twigs. Ī function and innervation.
- Structure of the conjunctiva. Clinical signs of its normal condition.
- Anatomy of slozovyh organs. Methods of investigation of the slozovyh pathways.
- External nerves of the eye. Ī inertia and functions.
- The essence of the vision, its violations, methods of investigation.
- Examination of gostrity of vision. Formula of gostrity of vision.
- Principles of making tables for gostrosis determination. Kut zoru.
- Peripheral vision and its examination. Types of visual field disorders.
- Theories of symmetry, its disorders, methods of research. Theories of color perception.
- Methodology of Investigation of the Transdniepereriodicoccupation (focal, bifocal illumination, biomicroscopy).
- Methods of examination of optical environments of the eye.
- Basic elements of the light and vision system of the eye. The concept of dioptr.
- Types of clinical refraction. Role of the external environment in the formation of refraction.
- Methods of determination of refraction (relative and subjective).
- Correction of ametropia in children and adults. Optic ocular skeletons and their use. Contact lenses and their use.

- Accommodation and its age-related changes. Presbyopia.
- Hypermetropia, its treatment, diagnosis and correction.
- Myopia, its diagnosis, causes of development, complications, prophylaxis, progression.
- Astigmatism, its forms and correction.
- Main conditions for binocular vision. Significance of binocular vision in the choice of profession.
- Cosoconstriction: classification, diagnostics, treatment, treatment.
- Anomalies of the positioning of the eyes (ventropion, ectropion, ptosis, lagophthalmus). Reasons Their occurrence, treatment, methods of treatment.
- Sustained diseases of the hives: barley, chalazion, blepharitis. Clinic, treatment.
- Dacryocystitis, e t i o l o g y , treatment.
- Sustained diseases of the orbit (osteoperiostitis, phlegmon of the orbit, thrombosis of the hepatic sinus), treatment and treatment.
- Clinical course, etiology and methods of treatment of acute mucous membrane inflammation.
- Clinical manifestations, etiology and treatment methods of chronic conjunctivitis.
- Trachoma stages, their treatment, general principles of treatment.
- Clinical and personal prophylaxis of trachoma.
- Trachoma elucidation on the side of the horns and horns.
- Classification, treatment and consequences of keratitis.
- Hornblende Virus Disease, its treatment and treatment.
- Parenchymatous keratitis, treatment and treatment.
- Herpetic keratitis. Īx diagnosis and treatment.
- Serous iridocyclitis. Its clinical peculiarities, treatment and treatment.
- Clinical signs of fibrinous iridocyclitis, etiology, pathogenesis, methods of treatment.
- Intrinsic puffiness, clinical course, treatment.
- Anomalies of the Cristal head position, diagnosis, complications, treatment
- Natural cataract. Clinic, diagnostics, treatment methods.
- Stages of development of cataract. Diagnostics and treatment.
- Diagnostics and conservative treatment of the initial stage of cataract.
- Traumatic cataract. Peculiarities of its course, complications, surgical treatment.
- Cataract disorder, its causes, treatment.
- Secondary cataract, its treatment, causes of occurrence, surgical treatment.
- Aphakia, its signs, correction.
- Ophthalmoscopy, its views.
- The picture of a normal face-to-face bottom.
- Ways of intraocular fluid outflow.
- Dynamic classification of glaucoma.
- Methods for early diagnosis of glaucoma. Significance of dispensary examination of glaucoma patients.
- Clinical forms of primary glaucoma, treatment.
- Differential diagnostics of primary glaucoma and cataract.
- Gastrointestinal attack of glaucoma, its diagnosis, emergency aid, treatment. Differential diagnostics with iridocyclitis.
- Secondary glaucoma, its causes, treatment.
- Natural glaucoma, its causes, its treatment.
- Signs of penetrating injuries of the face. Inadvisable assistance in case of them.
- Penetrating injuries of the eyes, complicated by the presence of a foreign body. Methods of localization of the external body in the eye.
- Principles of removal of internal side bodies in penetrating eye wounds.
- The complication of penetrating wounds.

- Sympathetic ignition, its treatment, prophylaxis, treatment.
- Contusions of the eyeball. Its manifestations and treatment.
- The side bodies of the horn and emergency aid in case of them.
- Electroophthalmia, its clinical manifestations and first aid.
- Endophthalmitis and panophthalmitis. Its treatment, causes, treatment.
- Chemically active eyes, clinic, non-emergency assistance.
- Thermal eye opics, clinic, non-emergency assistance.
- Military Medical Examination of Eyes Disease.
- Detection of aggravation and simulation. Control methods of gostrity of vision testing.
- Establishment of invalidity group as a result of visual impairment.
- Clinic of optic nerve neuritis. Causes, differential diagnosis of occlusive disc of optic nerve.
- Ophthalmoscopic picture of the occlusive disc of the optic nerve. Significance of it in diagnostics of cerebral puffiness.
- Changes of the frontal fundus in hypertonic disease, cerebral diabetes, blood diseases, STDs.
- SITCHING, etiology, treatment, treatment.
- Gastrointestinal blood circulation disorders. Causes, treatment, treatment
- Retinoblastoma. Diagnosis. Clinic. Treatment.
- Organization of ophthalmologic care in Ukraine.

## LIST OF PRACTICAL SKILLS

### for the reference room

No. s/p	Name of practical methods and skills	Steps
1.	Determination of gostriliness of vision by a subjective method	+
2.	Determination of the Kolorospriyatty by Rabkin's Tables	+
3.	Determination of the field of vision by the control method	+
4.	Determination of the visual field using the arc perimeter	+
5.	Perform inspection and revise the conjunctivous to inspect the conjunctivi	+
6.	Hornblende examination by shade illumination method	+
7.	Determine the sensitivity of the horn	+
8.	Palpation to determine the painfulness of the bodily fluids	+
9.	Inception of the eye vice tonometrically	+
10.	Inception of the eye vice palpatorily	+
11.	Cristalic investigation in transmitted light and shade illumination	+
12.	The definition of the slanted bite by Hirschberg	+
13.	Carry out external examination of the eyes: focal illumination, bifocal illumination, Ocular rutting, ophthalmoscopy	+
14.	Prominence of the conjunctival cavity	+
15.	Putting the ointment behind the poviks	+
16.	Removal of foreign bodies from the conjunctiva	+
17.	A povik massage.	+
18.	Zakapuvannya krapel	+
19.	Applying the interconnection	+
20.	Provide emergency care for acute iridocyclitis	+
21.	Provide emergency care for acute conjunctivitis	+
22.	Provide urgent assistance in case of external body of conjunctivitis, horns	+

23.	Provide emergency care for acute glaucoma attacks	+
24.	Provide emergency treatment for penetrating wounds to the eye	+
25.	Provide emergency assistance for chemical and thermal injuries to the eye	+

## • FORMS OF CONTROL AND EVALUATION CRITERIA FOR STUDENTS

The university uses different forms of control classes in a certain academic discipline (oral, written, combined, tests, practical skills, etc.). The results of students' academic success are evaluated on a national scale, 200-point scale, and ECTS scale and have standardized generalized criteria for evaluating knowledge:

*national scale:*

- The mark "**excellent**" is given to the student who systematically worked during the semester, showed diverse and profound knowledge of the program material during the examination, is able to successfully perform the tasks specified in the program, has mastered the content of the main and supplementary literature, has learned the interrelation of individual sections of the discipline, their

The competence level is high (creative); the level of competence is high (creative);

- The rating "**good**" is given to the student who has demonstrated full knowledge of the educational and program material, successfully completes the tasks required by the program, has mastered the basic literature, has mastered the basic literature recommended by the program, has shown sufficient level of knowledge in the discipline and is able to update them independently in the course of further study and professional activities; competence level is sufficient (constructive-variative);

- the grade "**pass**" is given to the student who has demonstrated knowledge of the basic teaching and program material to the extent necessary for further study and subsequent work for the profession, copes with the tasks, The program has made some lapses in the answers to the differentiation hall and in the performance of the test tasks, but has the necessary knowledge to correct the lapses under the supervision of a teacher and researcher; competence level is medium (reproductive);

- The rating "**unsatisfactory**" is given to the student who has not demonstrated sufficient knowledge of the basic educational and program material, made principle mistakes in completing the tasks specified in the program, cannot use the knowledge in further studies without the teacher's help, and has not mastered the skills of self-study work; competence level is low (receptive-productive).

### **Inline control**

Incomplete control is carried out at each practical training session by means of a verbal or written control. After the study of each section on the basis of control of theoretical knowledge, practical skills and abilities is carried out by control of practical skills. Incomplete training activities of the student is evaluated in the practical training session for the traditional 4-point scale.

During the practical sessions a large part of the time (not less than 60%) must be devoted to work with patients, laboratory examination results, radiographs and so on. The rest of the time is devoted to analysis and joint discussion of the results of students' independent work with the correction of errors.

The average assessment for all kinds of activities of the student during the practical training is the final one.

Evaluation of all students' learning activities is not mandatory in every practical session. However, at least 50% of the students must be evaluated during the practical training.

At the end of the study discipline the final success is calculated as the average score of all scores received by the student in the traditional scale, rounded to two digits after the coma.

Additional (bonus) points can be received by the student for the performance of individual tasks:

- participation and a report in the students' scientific conference;
  - participation in the subject Olympiad of ophthalmology, presentation at the student scientific gurta;
- preparation of multimedia slides and design of tests;
- translations of scientific articles in foreign languages;
- Abstract work on a certain topic.

The number of points, which are charged for different types of individual tasks depends on their scope and significance are determined by the model and work program discipline and added to the amount of points earned by students for the current educational activity for a particular section. Assessment for the individual tasks are charged to the students only for the conditions of their successful implementation and protection. The evaluation is added to the final success.

### **Summative control**

The form of the summative control is a differentiation hall, which is evaluated on a 4-point scale.

Differentiated score is displayed at the last class in the discipline for the results of the summary discussion at the obligatory performance of all types of student work, The student must complete all types of work specified in the curriculum (on the condition of attending all classes, receiving a positive assessment of the control of the acquisition of practical skills) and assessed for the current study activities in the average not less than 3.00.

Methods for diagnostics of mastering the material is control of practical skills (demonstration of methods and techniques for performing the proposed practical skills in the discipline), the results of 2 clinical tasks as the Croc-2 type theoretical questions.

The evaluation, received for the answer on the hall of reference, and the score of the average current success during the study of the discipline is used to calculate the average arithmetic, which consists of a general assessment of the discipline.

In the student's record book, the teacher enters an assessment of the discipline for the traditional and 200-point scales.

### **Independent work of students.**

Independent and individual work in the study of academic disciplines provided by methodological development of students' self-study work, teaching aids (presentations, educational films), information resource departments, topics of self-study and individual tasks for each task, algorithms for practical skills, algorithms for self- and self-monitoring of knowledge and skills, test tasks type "Croc-2" for each lesson.

Students' independent work, which is provided by the theme of the class order with the classroom work, is evaluated during the final control of the topic in the corresponding session. Mastery of topics, which are only for self-study, is checked during a differentiation hall.

### ***Conversion of traditional assessment from the discipline to a lag scale***

Of particular methodological importance is the conversion of the result of the student's study of the discipline on a 200-point scale and the further ranking of the rating scale (ECTS). This is necessary for the implementation of academic mobility of the student, giving students the opportunity to continue studies in this discipline in another HEI or in another country.

At the end of the cycle, the average score of the current success is entered into the electronic notification and the evaluation of the differentiated hall.

*GPA scale* characterizes the actual success of each student in completing the academic disciplines. Conversion of traditional assessment from the disciplines in 200-point is carried out by the information center of the university program "Contingent" by the formula:

*average success rate (in-service / in-discipline) x 40*

national assessment	Bali
«5»	185-200
«4»	151-184
«3»	120-150

### **Conversion of traditional assessment from the discipline to the amount of ECTS grades**

According to the rating scale USTS evaluated achievements of students in the discipline, which are studied in one course of one specialty, in accordance with the scores they received by ranking, namely:

ECTS Assessment	Statistical indicator
«A»	Top 10% of students
«B»	Advance 25% of students
«C»	Next 30% of students
«D»	Advance 25% of students
«E»	The remaining 10% of students

ECTS scale establishes the student belonging to the group of best or worst among the reference group of fellow students (department, specialty) that is his/her rating. When converting from a bagatobalnoy scale, as a rule, the range of ratings "A", "B", "C", "D", "E" do not coincide with the range of ratings "5", "4", "3" on a traditional scale. The grade "A" on the ECTS scale cannot equal the grade "excellent", and the grade "B" - the grade "good", etc.

Students who received "Fx" and "F" grades ("2") are not included in the list of students to be ranked. These students will automatically receive an "E" grade after the rearrangement.

The grade "Fx" is given to students who received the minimum number of points for the in-service training activities, but who did not receive a midterm grade. Grade "F" is given to students who have attended all classroom sessions in the discipline, but did not receive an average score (3.00) for the in-service training activities and not admitted to the summary control.

- **Methodological support**

Teaching the discipline **at the lectures** provided methodological development of each lecture, published texts of lectures, teaching aids for each lecture (presentations, training films), informational resource department.

Teaching the discipline **at the practical training sessions** provided by methodological development of each practical session, teaching aids for each session (presentations, training films), sets of diagnostic and treatment tasks. Information resource of the departments, topics of self-study and individual tasks for each task, algorithms of practical skills performance and structured algorithms of skills control, test tasks of "Croc-2" type for each lesson.

**Independent and individual work** in the study of academic disciplines provided by methodological development of students' self-study work, teaching tools (presentations, educational films), information resource departments, topics of self-study and individual tasks

for each task, algorithms for practical skills, algorithms for self- and self-monitoring of knowledge and skills, test tasks type "Croc-2" for each lesson.

Conducting **pdsumptive module control** is ensured by methodological development of lectures and practical exercises, informational resource departments, tests of "Croc-2" type for the admission of students to the hall of differentiation, standardized tests, structured algorithms control practical skills.

- **Sources of information**

- **Main Literature**

- Ophthalmology : manual / G.D. Zhaboedov, R.L. Skrypnyk, T.V. Baran et al. D. Zhaboedov, M.D., prof. R.L. Skrypnyk. - K. :VSV "Medicine", 2011. - – 424 c.
    - Ophthalmology : practice / G.D. Zhaboedov, V.V. Krierev; ed. by Corresponding Member of NAMS of Ukraine Professor G.D. Zhaboedov - K. :VS Medicine. NAMS of Ukraine, prof. G.D. Zhaboedov, - K. : VSV "Medicine", 2011. - – 280 c.
    - G.Y. Venger, A.M. Soldatova, L.V. Venger. Ophthalmology. Course of lectures. - Odessa: Odessa Medical University, 2010. 180 p.
    - Ophthalmologic aid in Ukraine for the years of independence / Moiseenko R.O., Golubchikov M.V., Mikhalchuk V.M., Rikov S.O. and others (a total of 35 persons) // Analitic-statistical guide - Kropivnitsky: "Polium", 2019. - – 328 c.
    - Therapeutic ophthalmology. The manual on ophthalmology / Edited by G.D. Zhaboedov, A.O. Vatchenko, K.: "Zdorov'ya", 2003. - – 133 c.
  - Ophthalmology [Text]: tutorial for students of the Faculty of Dentistry / A.B. Stepanyants, E.V. Bobykin, E.A. Stepanova; FGBOU VPO UGMU Ministry of Health of Russia. - Yekaterinburg : UGMU Publishing House, 2017. - — 84 c.
  - Order of the Ministry of Health of Ukraine of 28.01.2016 № 49 "On approval and implementation of medical and technical documents on standardization of medical care for cataract" <https://ips.ligazakon.net/document/MOZ25523>; <https://medprosvita.com.ua/nakaz-moz-ukrayini-vid-ipro-zatverdzhennya-vprovadzhennya-mediko/>
  - Order of the Ministry of Health of Ukraine of 08.12.2015 № 827 "On approval and implementation of medical and technical documents on standardization of medical care for disorders of refraction and accommodation" <https://ips.ligazakon.net/document/MOZ25456>
  - UNIFORM CLINICAL PROTOCOL FOR MEDICAL CARE GLAUCOMA PRIMARY INTRAOCUTANEOUS PRIMARY AND SECONDARY MEDICAL CARE <https://medprosvita.com.ua/unifikovanijj-klinichnijj-protokol-med/>
  - Online platform of evidence-based clinical protocols of the Ministry of Health of Ukraine <https://guidelines.moz.gov.ua/documents>
  - Methods of examination of patients. Fundamentals of pharmacotherapy and optometry in ophthalmology: textbook / comp. B. V. Zharov [et al]. - Izhevsk, 2015.- 70 p.
- Glaucoma and "dry eye" syndrome / V.V. Brzesky. - Moscow : Borges, 2018. - – 228 c.  
Basic tools for the study of the discipline (manuals from paragraphs 1-3) can be downloaded electronically from the university library.

- **Further reading:**

- Vander J.F., Gault J.A. Secrets of ophthalmology / Textbook for ophthalmologists, students of medical institutions, for general specialists / Translation from the 2nd English

edition under the editorship of Astakhov Y.S. - S. Astakhov. Moscow: Medpress-inform, 2005. - – 462 c.

- G.E. Venger, S.A. Rykov, L.V. Venger. Reconstructive iris surgery. - Kiev: Logos, 2006. - – 255 c.
- General diseases. Edited by G.D. Zhaboedov, M.M. Sergienko, K.: Zdorov'ya, 1999. - – 310 c.
- Eye Diseases: Textbook / Ed. by Kopaeva V.G. Moscow: Medicine, 2002. - – 560 c.
- E.E. Somov Eye Diseases and Injuries. - SPb., 2002. - – 236 c.
  - Y.S. Astakhov, G.V. Zhilopulo. Eye Diseases. - The general practical work for physicians . In: SpetsLit. 2001. - SPb.: SpetsLit, 2001. - – 248 c.
  - L.I. Balashevich, Y.D. Berezin, E.V. Boiko Modern ophthalmology. A guide for physicians. - St.-Petersburg, M., Kh., Minsk: Peter, 2000. - – 667 c.
  - I.L. Verfilfajn Medicines in ophthalmology. Side effects on the eye of drugs of general medicine.: handbook / I.L. Verfilfain, S.A. Rykov. - K.: Macros ltd, 2008. - – 280 c.

- ***Information resources***

- The website of the Czech National University Library. Petr Mohyla Library <http://library.chnu.edu.ua/index.php?page=ua/02infres/04elib>
- ONMED Library electronic site <https://info.odmu.edu.ua/chair/ophthalmology/>
- Institutional Repository of the Nadezhda National Medical University <https://repo.odmu.edu.ua/xmlui/>
- National Scientific Medical Library of Ukraine <http://library.gov.ua/>
- V.I. Vernadsky National Library of Ukraine. Vernadsky <http://www.nbu.gov.ua/>
- Electronic Database of Scientific Publications of the U.S. National Institute of Health National Medical Library; [https://library.gov.ua/svitovi-e-resursy/dir\\_category/general/](https://library.gov.ua/svitovi-e-resursy/dir_category/general/)
- Education portal NMU named after O . O. Bogomolets <http://nmuofficial.com/zagalni-vidomosti/biblioteky/>