йFEDERAL STATE BUDGETARY
EDUCATIONAL INSTITUTION OF HIGHER EDUCATION
"AMUR STATE MEDICAL ACADEMY"
MINISTRY OF HEALTH OF THE RUSSIAN FEDERATION

AGREED
Vice-Rector for Academic Affairs,

_____N.V. Loskutova

April 17, 2025

Decision of the Central Committee of the Moscow Council
April 17, 2025

Protocol No. 7

APPROVED
by decision of the Academic Council of the FSBEI HE Amur SMA of the Ministry of Health of the Russian Federation
April 22, 2025

Protocol No. 15

Acting Rector of the FSBEI HE Amur SMA of the Ministry of Health of the Russian Federation

_____I.V. Zhukovets

April 22, 2025

ДОКУМЕНТ ПОДПИСАН
ЭЛЕКТРОННОЙ ПОДПИСЬЮ

Сертификат: 50AB2242604E64520B52614FA420034A
Владелец: Жуковец Ирина Валентиновна
Действителен: с 15.04.2025 до 09.07.2026

EDUCATIONAL PROGRAM

discipline "Ophthalmology"

Specialty: 31.05.01 General Medicine
Course: 5
Semester: 9
Total hours: 108 hrs.
Total credits: 3 credit units
Control form: credit-test, 9 semester

Blagoveshchensk, 2025

The educational program of the discipline is designed in accordance with the requirements of the Federal State Educational Standard of Higher Education - Specialist in specialty 31.05.01 General Medicine, approved by the order of the Ministry of Education and Science of Russia dated 12.08.2020 No. 988 (registered in the Ministry of Justice of Russia on 08.26.2020 No. 59493), BPEP HE (2021).

Author:
Professor of the Department of Otolaryngology and Ophthalmology, Holder of the Advanced Doctorate (Doctor of Sciences) in Medical Sciences, Associate Professor A.S. Vydrov

Reviewers: Head of the Ophthalmology Department, Far Eastern State Medical University, Professor, Holder of the Advanced Doctorate (Doctor of Sciences) in Medical Sciences E.L. Sorokin
Head of the Department of Traumatology with a Course in Disaster Medicine FSBEI HE Amur SMA, Holder of the Advanced Doctorate (Doctor of Sciences) in Medical Sciences, Professor I.V. Borozda

APPROVED at the meeting of the Department of Otolaryngology and Ophthalmology,
Protocol No. 13 dated April 10, 2025

Head of the Department, Holder of the Advanced Doctorate (Doctor of Sciences) in Medical Sciences, Professor _____ A.A.Blotsky

Conclusion of the Expert Commission for review of the Work Programs:
Protocol No. 2 dated April 10, 2025

Expert of the expert commission
Holder of the Advanced Doctorate (Doctor of Sciences) in Medical Sciences, Professor _____ A.A. Blotsky

APPROVED at the meeting of the Central Monitoring Committee No. 4:
Protocol No. 4 dated April 5, 2025

Chairman of the CMC No. 4
Holder of the Advanced Doctorate (Doctor of Sciences) in Medical Sciences,
Professor _____ I.V. Borozda

AGREED: Dean of the Faculty of Medicine,
Ph.D. of Medical Sciences _____ N.G. Brash

April 17, 2025

CONTENT

1 . EXPLANATORY NOTE

1.1. Characteristics of the discipline

Ophthalmology is a field of clinical medicine that studies the etiology, pathogenesis, and clinical course of diseases of the visual organ, as well as developing methods for diagnosing, treating, and preventing these diseases.

1.2. Purpose and objectives of the discipline.

The purpose of the course is to ensure that students acquire theoretical knowledge and practical skills in the field of ophthalmology, taking into account further education and professional activities in the specialty of general medicine in outpatient settings.

The objectives of the discipline are:

1. To familiarize students with the specific weight of the specialty in general pathology, with the importance of timely detection and elimination of diseases of the organ of vision, in the prevention of general morbidity and in the health improvement of the population, with the principles and methods of outpatient and dispensary work of an ophthalmologist.
2. To familiarize students with the features of the examination of the visual organ in newborns, young children, children of different age groups; the indicator of the significance of the results of this examination in the general clinical examination, in identifying pathology of the central nervous system.
3. To familiarize students with the etiology, pathogenesis, clinical picture, diagnosis, prevention and treatment of diseases of the organ of vision that are common, have social significance, require emergency care, cause concomitant diseases in the body or complications.
4. To teach students practically necessary functional methods of examining the organ of vision, providing emergency care for injuries, burns, foreign bodies and other acute diseases of the organ of vision of different age groups.

1.3. The place of the discipline in the structure of the main professional educational program of higher education.

In accordance with the Federal State Educational Standard of Higher Education - a specialist in the specialty 31.05.01 General Medicine (2020), the discipline "Ophthalmology" refers to the disciplines of the basic part, Block 1. The total workload is 3 credits (108 hours), taught in the 9th semester in the 5th year. The form of control is a credit with a grade.

Main sections of the discipline studied

1. Anatomy, physiology, methods of studying the organ of vision
2. Inflammatory diseases and traumatic injuries of the visual organ.
3. Infectious granulomas and neoplasms of the visual organ.

1.4 Requirements for students

Initial level of the student - when starting to study the discipline "Ophthalmology", the student must have a basic level of knowledge, skills and abilities in the following disciplines:

Anatomy :

***Knowledge* :** normal anatomy of the visual organ. Age-related features (II - III level).
Skills: be able to analyze age-related features of the anatomy of the visual organ.
Skills: differentiation of various parts and structures of the eyeball.
Normal Physiology:
Knowledge: normal physiology of the visual organ. Age-related features (II - III level).
***Skills* :** be able to analyze age-related features of the physiology of the visual organ.
Skills: understanding the close interaction of the various structures of the eyeball.
Biology
Knowledge: embryogenesis of tissues of the organ of vision, structure, function and structural features (II - III level).
***Skills* :** be able to determine age-related patterns of development of the visual organ, analyze the results of histophysiological research, work with a light and electron microscope, taking into account safety regulations.
Skills: working with a slit lamp.
Histology, embryology, cytology:
Knowledge: embryogenesis of tissues of the organ of vision, structure, function and structural features (II - III level).
***Skills* :** be able to determine age-related patterns of development of the visual organ, analyze the results of histophysiological research, work with a light and electron microscope, taking into account safety regulations.
Skills: transmitted light examination, reverse ophthalmoscopy
Pathological anatomy, clinical pathological anatomy:
Knowledge: anatomy of the visual organ in various pathological processes. Age-related features (II - III level).
***Skills* :** be able to analyze age-related features of the physiology of the visual organ in various pathological processes.
Skills: mastering the light test Belostotsky -Fridman, tonometry.
Topographic anatomy and operative surgery:
Knowledge: topographic-anatomical interaction of the visual organ with the paranasal sinuses, as well as with other organs and systems. Age-related features (II - III level).
***Skills* :** be able to analyze the topographic-anatomical interaction of the visual organ with the paranasal sinuses, as well as with other organs and systems in different age groups.
Skills: application of various types of sutures (on skin, conjunctiva, sclera, cornea).

1. 5 Interdisciplinary links with subsequent disciplines

Knowledge, skills and abilities necessary for studying subsequent disciplines:

No.	Name of subsequent disciplines	Section numbers of this disciplines required for the study of subsequent disciplines		
		1	**2**	**3**
1	Epidemiology	+	+	+
2	Medical rehabilitation	+	+	+
3	Neurology, medical genetics, neurosurgery	+	+	+
4	Otorhinolaryngology	+	+	+
5	Dermatovenereology	+	+	+
6	Forensic medicine	+	+	
7	Obstetrics and gynecology	+	+	
8	Occupational diseases	+	+	+
9	Phthisiology	+	+	+
10	Hospital surgery	+	+	+
11	Dentistry	+	+	+
12	Hospital therapy	+	+	+
13	Outpatient and emergency pediatrics	+	+	
14	Anesthesiology, resuscitation, intensive care	+	+	
15	Oncology, radiation therapy	+	+	+
16	Traumatology, orthopedics	+	+	
17	Hospital therapy	+	+	+
18	Infectious diseases	+	+	+
19	Pediatric surgery	+	+	+

1. 6 Requirements for the results of mastering the discipline

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

No. p/p	Code and name of competence	Code and the name of the indicator of achievement of competence	As a result of studying the academic discipline, the student must:		
			Know	**Be able to**	**To own**
Universal competencies					
1	**UK-1** Capable realize critical analysis of problematic situations based on a systems approach, to develop strategy of action	**ID UK-1.1.** Analyzes a problem situation as a system, identifying its components and the connections between them. **ID UK-1.2.** Identifies gaps in information needed to solve problem situations and designs processes to eliminate them . **ID UK-1.3.** Applies systems analysis to resolve problematic situations in the professional sphere.	Concepts, principles and methods of self-development, self-realization, self-education, use of creative potential	Use the principles and methods of self-development, self-realization, self-education, and use of creative potential	Methods of self-development, self-realization, self-education, use of creative potential
2	**UK-6** Capable to define and implement priorities for one's own activities and ways to improve them based on self-assessment and lifelong learning	**ID UK-6.1.** Assesses his personal, situational and temporary resources and uses them optimally to complete the assigned task. **ID UK-6.3.** Carries out critical self-analysis of the results of one's own activities.	Principles of using information, bibliographic resources, information and communication technologies, taking into account the basic requirements of information security, medical and biological terminology .	Use information, bibliographic resources, information and communication technologies taking into account the basic requirements of information security	Methods for solving standard tasks of professional activity using information, bibliographic resources, medical and biological terminology, information and communication technologies and taking into account the basic requirements of information security
General professional competencies					

3	**OPK-4.** Capable of using medical devices provided for by the procedure for providing medical care, as well as conducting patient examinations to establish a diagnosis	**ID OPK-4.1.** Uses modern medical technologies, specialized equipment and medical products, disinfectants, drugs, including immunobiological and other substances and their combinations when solving professional problems from the standpoint of evidence-based medicine. **ID OPK-4.3.** Interprets the results of the most common methods of instrumental, laboratory and functional diagnostics, thermometry to identify pathological processes. **ID OPK-4.4.** Has a command of general methods clinical examination of patients of different ages. **ID OPK-4.5.** Formulates a preliminary diagnosis and clinical diagnosis according to ICD.	Types and methods of application of medical devices provided for by the procedures for providing medical care in ophthalmology	Use medical products provided for by the procedures for providing medical care	Methods of using medical products provided for by the procedures for providing medical care
4	**OPK-5.** Capable of assessing morphofunctional, physiological states and pathological processes in the human body to solve professional problems	**ID OPK-5.1.** Knows the functional systems of the human body, their regulation and self-regulation when interacting with the external environment in normal conditions and during pathological processes. **ID OPK-5.2.** Knows the etiology, pathogenesis, morphogenesis, pathomorphosis of disease development, and the basic concepts of nosology. **ID OPK-5.3.**	Methods of analyzing the results of one's own activities. Concept and types professional mistakes.	Analyze the results of your own activities to prevent professional mistakes	Methods of analyzing the results of one's own activities to prevent professional mistakes

		Knows the indicators morphofunctional, physiological state of a healthy person and is able to measure/determine them. **ID OPK-5.4.** Applies indicators morphofunctional, physiological state and pathological process for examination of the human body for the purpose of establishing a diagnosis, appointment treatment and monitoring its effectiveness and security. **ID OPK-5.5.** Analyzes and interprets macroscopic and microscopic changes in normal and pathologically altered tissues and organs. **ID OPK-5.6.** Interprets the results of biopsy and surgical material studies to solve professional problems and formulate a diagnosis in accordance with the ICD.			
5	**OPK-7.** Able to prescribe treatment and monitor its effectiveness and safety	**ID OPK-7.1.** Selects a drug based on the totality of its pharmacokinetic and pharmacodynamic characteristics for the treatment of patients with various nosological forms in outpatient and inpatient settings. **ID OPK-7.2.** Selects the optimal minimum of the most effective means, using convenient methods of their applications.	Nomenclature of medicinal products, pharmacodynamics , pharmacokinetics, indications and contraindications for use, main mechanisms of action, clinical effects. Treatment regimens.	Use medicinal preparations and other substances and their combinations when solving professional problems	Methods of using medicinal preparations and other substances and their combinations in solving professional problems

		ID OPK-7.4. Prescribes medications for the treatment of diseases and correction of pathological conditions, based on the characteristics of the pharmacokinetics and pharmacodynamics of drugs. **ID OPK-7.5.** Takes into account morphofunctional features, physiological states and pathological processes in the human body when choosing over-the-counter drugs and other pharmacy products assortment. **ID OPK-7.6.** Analyzes the results of possible drug interactions when using various drugs in combination. **ID OPK-7.7.** Assesses the effectiveness and safety of drug therapy using a combination of clinical, laboratory, instrumental and other diagnostic methods.			
6	**OPK-10** Able to understand the principles of operation of modern information technologies and use them to solve problems of professional activity	**ID OPK-10.2.** Performs effective search information necessary for solving problems of professional activity, using legal reference systems and professional pharmaceutical databases. **ID OPK-10.3.** Uses specialized software for mathematical processing of observational and experimental data when solving problems in professional activities.	Principles and methods of preserving and strengthening children's health, including the formation of a healthy lifestyle, prevention of the occurrence and (or) spread of diseases, their early diagnosis, identification of the causes and conditions of their occurrence and	To implement a set of measures aimed at preserving and strengthening the health of children and including the formation of a healthy lifestyle, prevention of the occurrence and (or) spread of diseases, their early diagnosis, identification of the causes and conditions of their	A set of measures aimed at maintaining and strengthening the health of children and including the formation of a healthy lifestyle, prevention of the occurrence and (or) spread of diseases, their early diagnosis, identification of the causes and conditions of their occurrence

			development, as well as aimed at eliminating the harmful effects of environmental factors on children's health	occurrence and development, as well as aimed at eliminating the harmful effects of environmental factors on children's health	and development, as well as aimed at eliminating the harmful effects of environmental factors on the health of children
7	**OPK-11** Capable prepare and apply scientific, scientific-production, design, organizational-managerial and regulatory documentation in the healthcare system	**ID OPK 11.1.** Apply modern methods of collecting and processing information, conduct statistical analysis of the obtained data in a professional manner areas and interprets results for solving professional problems. **ID OPK-11.2.** Identifies and analyzes problem situations, carries out search and selection of scientific, regulatory and legal organizational and administrative documentation in accordance with given goals. **ID OPK-11.4.** Conducts scientific and practical research, analyzes information using the historical method and prepares publications based on the results research.	Types and methods of maintaining medical records	Maintain medical records independently	Methods of maintaining basic medical records
Professional competencies					
8	**PC-2.** Capable of collecting and analyzing complaints, anamnesis of life and anamnesis	**ID PC-2.1 .** Establishes rapport with the patient. **ID PC- 2.2.** Collects complaints, specifies them, highlighting the main and secondary ones.	Methods of collecting and analyzing patient complaints, anamnesis data, examination results, laboratory,	Collect and analyze patient complaints, medical history data, examination results, laboratory,	Methods of collecting and analyzing patient complaints, data from his anamnesis, results of examination,

	diseases patient for the purpose establishments diagnosis	**ID PC-2 .3.** Collects and analyzes information about the onset of the disease, the presence of risk factors, the dynamics of the development of symptoms and the course of the disease. **ID PC-2 .4.** Analyzes the timing of the first and repeated requests for medical care, the volume of therapy provided, and its effectiveness. **PC ID -2.5 .** Collects and evaluates information about the patient's medical history, including data on past illnesses, injuries and surgeries, hereditary, professional and epidemiological history.	instrumental, pathological -anatomical and other studies for the purpose of recognizing a condition or establishing the presence or absence of a disease	instrumental, pathological and other studies in order to recognize the condition or establish the presence or absence of a disease	laboratory, instrumental, pathological -anatomical and other studies in order to recognize the condition, or establish the fact of the presence or absence of a disease
9	**PC-3.** Capable of conducting physical examination of the patient, analyze the results of additional examination methods in order to establish diagnosis	**ID PC-3.1.** Performs a complete physical examines the patient (inspection, palpation, percussion, auscultation) and interprets the results **ID PC-3.2** . Justifies the necessity, volume, diagnostic sequence measures (laboratory, instrumental) and referral of the patient to specialist doctors **ID PC-3.3.** Analyzes the results of the patient's examination, and, if necessary, justifies and plans the scope of additional research. **ID PC-3.4.** Interprets and analyzes	The main pathological conditions, symptoms, syndromes of eye diseases, nosological forms in accordance with the International Statistical Classification of Diseases and Related Health Problems – X revision, adopted by the 43rd World Health Assembly, Geneva, 1989.	To diagnose the main pathological conditions, symptoms, syndromes of eye diseases, nosological forms in accordance with the International Statistical Classification of Diseases and Related Health Problems – 10th revision, adopted by the 43rd World Health Assembly, Geneva, 1989.	Methods of diagnosing the main pathological conditions, symptoms, disease syndromes, nosological forms in accordance with the International Statistical Classification of Diseases and Related Health Problems – 10th revision, adopted by the 43rd World Health Assembly, Geneva, 1989.

		the results of collecting information about the patient's illness, data obtained during laboratory and instrumental examinations and during consultations with specialist doctors, and, if necessary, justifies and plans the scope of additional research. **ID PC-3.5.** Performs early diagnostics of internal organ diseases. Establishes a diagnosis taking into account the current international statistical classification of diseases and related health problems (ICD) **ID PC-3.6.** Conducts differential diagnostics of internal organ diseases from other diseases			
10	**PC-4.** Capable determine indications for hospitalization, indications for providing emergency, including emergency specialized, medical care	**ID PC-4.1.** Determines medical indications for emergency care, including emergency specialized medical care **ID PC-4.2.** Refer the patient for specialized medical care in an inpatient setting or in a day hospital setting if there are medical indications in accordance with the current procedures for providing medical care, clinical guidelines (treatment protocols) on issues of providing medical care, taking into account the standards of medical care **ID PC-4.3.** Uses medical products in accordance with current procedures for the provision of medical care, clinical guidelines	The procedure and principles of providing primary health care to children with sudden, acute eye diseases, conditions, exacerbation of chronic eye diseases that are not accompanied by a threat to the patient's life and do not require emergency medical care	Provide primary health care to children with sudden, acute eye diseases, conditions, exacerbation of chronic eye diseases that are not accompanied by a threat to the patient's life and do not require emergency medical care	Methods of providing primary health care to children with sudden, acute eye diseases, conditions, exacerbation of chronic eye diseases that are not accompanied by a threat to the patient's life and do not require emergency medical care

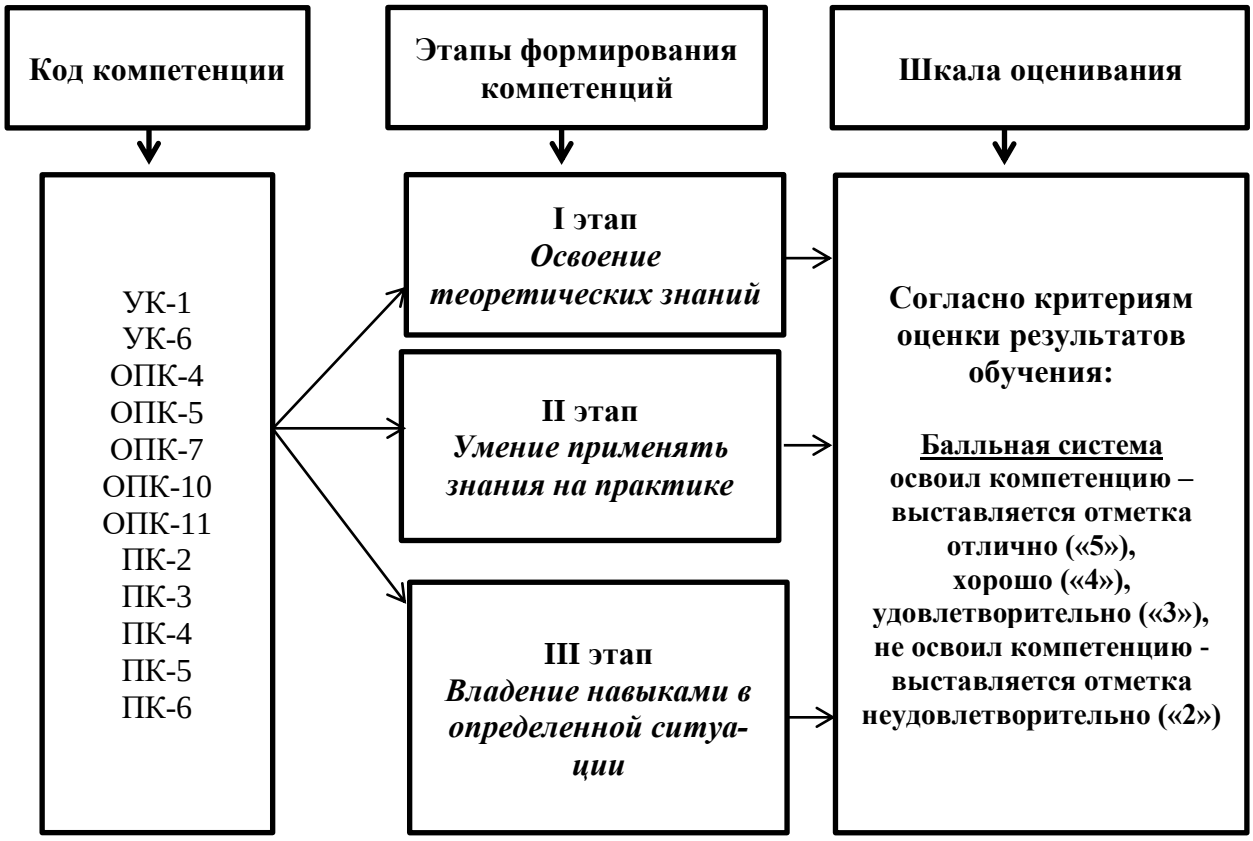
		(treatment protocols) on issues of providing medical care, care taking into account the standards of medical care			
11	**PC-5.** Able to prescribe treatment to patients	**ID PC-5. 1.** Draws up a treatment plan for the patient taking into account the diagnosis, age of the patient, clinical picture of the disease, presence of complications, concomitant pathology, in accordance with the current procedures for the provision of medical care, clinical recommendations (treatment protocols) on issues of providing medical care, taking into account the standards of medical care **ID PC-5. 2.** Prescribes medications, medical products and therapeutic nutrition taking into account the diagnosis, age and clinical picture of the disease in accordance with the current procedures for the provision of medical care, clinical recommendations, taking into account the standards medical care **ID PC-5. 3.** Prescribes non-drug treatment treatment taking into account the diagnosis, age and clinical picture of the disease in accordance with the current procedures for the provision of medical care, clinical recommendations, taking into account the standards of medical care **ID PC-5. 4.**	Principles of management and treatment of patients with various nosological forms in outpatient and day hospital settings	Treat patients with various nosological forms in outpatient and day hospital settings	Methods of management and treatment of patients with various nosological forms in outpatient and day hospital settings

		Provides palliative care in collaboration with specialist doctors and other health care workers **ID PC-5. 5.** Organizes personalized treatment for patients, including pregnant women, elderly and senile patients			
12	**PC-6.** Capable of monitoring the effectiveness and safety of the therapy being administered	**ID PC-6.1.** Assesses the effectiveness and safety of the use of drugs, medical devices and therapeutic nutrition and other treatment methods **ID PC-6.2.** Takes into account pharmacodynamics and pharmacokinetics of the main groups of drugs, prevents the development of adverse drug reactions, and corrects them if they occur.	Principles of managing patients with various nosological forms. Principles of analysis and public presentation of medical information. Fundamentals of evidence-based medicine	Determine the tactics of managing patients with various nosological forms. Analyze and publicly present medical information based on evidence-based medicine	Methods for determining the tactics of managing patients with various nosological forms. Methods for analyzing and publicly presenting medical information. Fundamentals of evidence-based medicine

Modules of the discipline and the code of the competence being formed

Item No.	Section name	Code of the competence being formed
1	Anatomy, physiology, methods of studying the organ of vision.	UK-1; UK-6; OPK-4; OPK-5; OPK-7; OPK-10; OPK-11; PC-2; PC-3; PC-4; PC-5; PC-6
2	Inflammatory diseases and traumatic injuries of the visual organ.	UK-1; UK-6; OPK-4; OPK-5; OPK-7; OPK-10; OPK-11; PC-2; PC-4; PC-3; PC-5; PC-6
3	Infectious granulomas and neoplasms of the visual organ.	UK-1; UK-6; OPK-4; OPK-5; OPK-7; OPK-10; OPK-11; PC-2; PC-3; PC-4; PC-5; PC-6

1.7 Stages of competencies development and description of assessment scales



1.8 Forms of training organization and types of control

Form of organization of students' training	Brief characteristic
Lectures	Lecture material contains key And most problematic questions disciplines , most significant V preparation specialist .
Practical classes	Intended For analysis (consolidation) of theoretical provisions And control over their assimilation With subsequent application received knowledge V in the course study of the topic.

Interactive forms of education	- solution situational tasks and exercises followed by discussion , - interactive survey; - execution creative tasks , - small group method, - discussions, - online course of the discipline in the Moodle system , - testing in the Moodle system .
Participation in the department's research work, student circle and conferences	- Preparation oral messages and poster presentations for speeches at a student club or scientific conference; - writing theses and abstracts on the chosen scientific field; - preparation of a literature review using educational, scientific, reference literature and Internet sources .
Types of control	**Brief description**
Incoming inspection	Testing theoretical knowledge and practical skills developed by the physics program in secondary (complete) general education institutions. The entrance knowledge control includes: - testing in the Moodle system (test of incoming knowledge control), - solving situational problems and exercises. The results of the incoming inspection are systematized, analyzed and used by the teaching staff of the department to develop measures to improve and update the teaching methods of the discipline.
Current control	Current knowledge control includes: - checking the solution of situational problems and exercises completed independently (extracurricular independent work); - assessment of the assimilation of theoretical material (oral survey and computer testing); - control over the technique of performing the experiment during practical classes and drawing up the protocol; - testing in the Moodle system on all topics of the discipline (tests include questions of a theoretical and practical nature); - individual assignments (practical and theoretical) for each topic of the discipline being studied.
Intermediate certification	The midterm assessment is presented as a test with a grade, which students are handed in at the end of the cycle. The test includes the following stages: - assessment of knowledge of theoretical material (oral survey and interview); - testing in the Moodle system (interim assessment test); - check of assimilation practical skills And skills ; - solving situational problems and exercises on each topic of the discipline studied.

2. STRUCTURE AND CONTENT OF THE DISCIPLINE

2.1 Scope of the discipline and types of educational activities

No. p/p	Types of educational work	Total hours	Semester 9
1	Lectures	20	20
2	Practical classes	52	52
3	Independent work of students	36	36
	Total labor intensity in hours	**108**	**108**
	Total workload in credit units	**3**	**3**

2.2 Thematic plan of lectures and their brief content

Item No.	Topics and content of lectures	Codes being formed competencies	Labor intensity (hours)
1	**Introduction to ophthalmology.** History of ophthalmology. Anatomy of the visual organs. Definition of ophthalmology as a science, its goals and objectives. Allocation of ophthalmology as an independent science. Paths of its development. History of development of domestic ophthalmology. Russian school of ophthalmologists (T.I. Eroshevsky , V.P. Filatov, E.S. Avetisov, E.I. Kovalevsky, Yu.Z. Rosenblum , M.M. Krasnov, S.N. Fedorov). Achievements of ophthalmological science in recent years. The eye and its role in the vital activity of the body. The eye as a link in the photoenergetic or optical-vegetative system of the body (eye-hypothalamus-pituitary gland). Blindness and its social significance (occupational blindness, reversible and irreversible blindness). The relationship of diseases of the organ of vision with other diseases of the body. The role of ophthalmology in the early diagnostics of general diseases (rheumatism, tuberculosis, blood diseases, etc.) Anatomy of the visual organ. The structure of the visual analyzer, the structure of the peripheral section - the eyeball, its membranes - the detailed structure and physiological function of each of them. Give several examples from practical ophthalmology to emphasize the importance of the function of some sections of the eye membranes. The contents of the eyeball, structure, function, physiological features. The essence of the visual act. Elements of the visual function (formed central vision, peripheral vision, light perception , color perception). Anatomical and physiological foundations and practical significance of central vision. Visual acuity. Angle of view. Principles of constructing tables for determining visual acuity. The Snellen-Donders formula for determining visual acuity. Control methods for determining visual acuity in cases of dissimulation, simulation, aggravation.	UK - 1, 6 OPK - 5, 7, 11 PC - 2, 3, 4, 5, 6	2
2	**Physiological optics. Refractogenesis, age-related features. Refraction. Accommodation. Astigmatism** . Brief information on optics: optical system, focus, diopter as a unit of refraction measurement. Optical system of the eye. Concept of physical and clinical refraction. Types of clinical refraction. Clinic of emmetropia, hypermetropia, myopia. Anisometropia . High progressive myopia, its clinic. Pathogenesis of myopia. Methods of myopia prevention, treatment of progressive myopia. Concept of astigmatism. Principles of ametropia correction. Accommodation, mechanism of accommodation. Causes and clinical manifestations of accommodative asthenopia.	UK - 6 OPK - 4, 5, 10, 11 PC - 2, 3, 4, 5, 6	2

	Muscular asthenopia. Age-related changes in accommodation. Accommodation spasm and accommodation paralysis. Corrective glasses. Concept of contact and intraocular lenses, indications for their prescription. Correction of presbyopia. Surgical methods of correction of refractive errors, indications for them.		
3	**Diseases of the eyelids. Diseases of the lacrimal organs. Classification. Diagnostics. Treatment. Conjunctivitis.** Three sections of the conjunctiva, their distinctive features. Inflammatory diseases of the conjunctiva: bacterial - acute and chronic, allergic (medicinal, spring catarrh, electrophthalmia). Acute bacterial conjunctivitis of exogenous origin (acute epidemic conjunctivitis Koch- Weeks , pneumococcal, gonococcal). Acute bacterial conjunctivitis of endogenous origin (measles, diphtheria, tuberculosis-allergic, adenovirus). Chronic conjunctivitis (professional conjunctivitis; conjunctivitis associated with ametropia, Morax-Axenfeld conjunctivitis , causes, clinical picture, treatment principles). Complications of conjunctivitis: keratitis, keratouveitis . Degenerative diseases of the conjunctiva - pinguecula , pterygium . Etiology of trachoma. Epidemiology and spread of trachoma. History of the fight against trachoma. Clinical picture of trachoma, its stage. Pannus (thin, vascular and fleshy). Diagnostics. Complications of trachoma (acute conjunctivitis, corneal ulcer, dacryocystitis). Consequences of trachoma (trichiasis, eversion of the eyelids, symblepharon , xerosis of the conjunctiva and cornea). Differential diagnosis of trachoma with folliculosis , follicular and adenoviral conjunctivitis. Prevention of trachoma, organizational forms of its control. Treatment of trachoma (medicinal, follicle extraction, surgical). Treatment of trachoma complications and consequences. Pathology of the tear-producing apparatus. Congenital anomalies of the lacrimal gland in children (absence, underdevelopment, ptosis). Diseases in children that may cause inflammation of the lacrimal gland. The main signs of dacryoadenitis. Diagnosis and treatment of dacryoadenitis. Neoplasm of the lacrimal gland (adenocarcinoma). Clinical picture, treatment, diagnostic methods, prognosis. Pathology of the lacrimal apparatus. Congenital and acquired changes in the lacrimal ducts. Absence or dislocation of lacrimal puncta; narrowing or obliteration of the lacrimal canals; diverticula of the lacrimal sac; stenosis of the nasolacrimal canal. Diagnostic methods, principles and timing of surgical treatment.	UK - 1 OPK - 4, 5, 7, 10, 11 PC - 2, 3, 4, 5, 6	2
4	**Pathology of the cornea and sclera.** Anatomy of the cornea and sclera. Clinical properties of the normal cornea and sclera. General symptomatology of keratitis. Definition of keratitis and leukoma, differential diagnosis. Classification of keratitis - anatomical classification (prevalence, depth of location, vascularization		2

	of the infiltrate, infiltrate with or without a defect). Etiology. Clinical forms of keratitis. Ulcerative keratitis. Creeping corneal ulcer, stages of development. Herpetic keratitis (simple vesicular, dendritic, disciform). Tuberculous-allergic phlyctenular keratitis. Deep tuberculous keratitis. Parenchymatous syphilitic keratitis. Principles of treatment of superficial keratitis. Principles of treatment of deep keratitis. Mydriatics and miotics in keratitis. Consequences of keratitis. Conservative treatment of persistent corneal opacities (corneal transplant). Prevention of keratitis. Social significance of corneal diseases as a cause of blindness and decreased ability to work. Scleritis and episcleritis . Etiology, clinical picture, treatment.	UK - 1.6 OPK - 4, 5, 7, 10, 11 PC - 2, 3, 4, 5, 6	
5	**Diseases of the vascular tract.** Anatomy of the iris, ciliary body, choroid . Features of the blood supply to the choroid and their clinical significance. Features of the development of the vascular tract in newborns. The concept of uveitis, iritis, iridocyclitis, choroiditis . Etiology of iritis and iridocyclitis. General symptomatology of iritis and iridocyclitis. Features of the course of uveitis in children. Endophthalmitis , panophthalmitis. Prevention of iritis and iridocyclitis. Differential diagnosis of iridocyclitis from iritis and an acute attack of glaucoma. Consequences of iridocyclitis. Treatment of iridocyclitis (general treatment, principles of local treatment). Mydriatics , their mechanism of action. Treatment of the consequences of iridocyclitis. General symptomatology of choroiditis , etiology, prevention. Residual effects after choroiditis , treatment. Principles of treatment of choroiditis .	UK - 6 OPK - 4, 5, 7, 10, 11 PC - 2, 3, 4, 5, 6	2
6	**Pathology of the lens. Cataract. Congenital cataracts.** Anomalies in the development of the iris and choroid . Malignant neoplasms of the iris, ciliary body and choroid . Diagnostics of neoplasms of the vascular tract. Enucleation, evisceration of the eyeball, exenteration of the orbit. Types and frequency of lens pathology. Diagnostic methods, modern principles of treatment. Anomalies in development. Changes in Marfan's disease , Marchesani's disease and other syndromes. Congenital cataracts. Frequency and causes of their occurrence. Classification of cataracts in children. The most common congenital cataracts. Indications for surgical treatment depending on the size of the cataract, its location, visual acuity, age of the child. Treatment of obscuration amblyopia, correction of aphakia. Features of the correction of unilateral aphakia. Contact lenses. Intraocular lenses. Secondary (postoperative) cataracts. Causes, clinical picture, treatment. Complicated cataracts. Cataracts developing due to general diseases (diabetes), eye processes (myopia, glaucoma, uveitis, retinal detachment, eyeball trauma), as a result of mercury poisoning, nitrites, protein starvation, ionizing radiation, exposure to infrared rays, injuries, etc. Clinical picture of these types of cataracts. Cataract treatment depending on the etiology of the process and the degree	UK - 6 OPK - 4, 5, 7, 10, 11 PC - 2, 3, 4, 5, 6	2

	of lens opacity. Age-related cataracts. Clinic. Stages of cataract development. Treatment depending on the stage of cataract. Indications for surgery. Methods of cataract extraction; phacoemulsification . Aphakia, its signs, principles of aphakia correction for distance and near vision. Features of unilateral aphakia correction. Intraocular correction, contact lenses.		
7	**Pathology of intraocular pressure. Glaucoma.** Circulation of aqueous humor. Drainage system of the eye. Normal intraocular pressure. Regulation of intraocular pressure. Daily variations in intraocular pressure. Symptom complex of glaucoma. Classification of glaucoma: congenital, childhood, juvenile, primary and secondary glaucoma. Types of congenital glaucomas and methods of their treatment. Differential diagnosis of congenital glaucoma and megalocornea . Classification of primary glaucoma. Open-angle glaucoma, pathogenesis, clinical features. Differential diagnosis of open-angle glaucoma from age-related cataract. Closed -angle glaucoma, pathogenesis, clinical features. Differential diagnosis of closed-angle glaucoma from open-angle glaucoma. Acute attack of glaucoma, pathogenesis, clinical features. Principles of treatment of acute attack of glaucoma. Differential diagnosis of acute attack of glaucoma with iridocyclitis. Secondary glaucoma. Role of damage, inflammation, tumor processes of the eye in occurrence. Features of the course of the process and modern methods of treatment. Early diagnostics of glaucoma (daily fluctuations of intraocular pressure, tonography). Glaucoma treatment methods. Drug treatment of glaucoma. Miotics , their mechanism of action, principles of application. Use of carbonic anhydrase inhibitors in glaucoma. Osmotherapy . Methods of general treatment of primary glaucoma (vitamin therapy, tissue therapy, vasodilators, antisclerotic agents). Work and life regimen of patients with glaucoma. Surgical treatment of primary glaucoma, principles of surgical treatment, indications for antiglaucoma operations.	UK - 6 OPK - 4, 5, 7, 10, 11 PC - 2, 3, 4, 5, 6	2
8	**Injuries to the organ of vision.** Place of eye trauma in general traumatism. Prevalence, seasonality, geography and predominant causes and types of eye injuries in people of different ages. Frequency of household, school and industrial injuries. Classification of eye injuries by etiology, localization, severity, presence and properties of foreign bodies, etc. Diagnostic methods. Main types of first aid for eye injuries. Treatment of complications. Prevention of eye trauma. Place in the structure and level of low vision and blindness. Non-penetrating eye wounds (cornea and conjunctiva) and first aid for them. Penetrating eye wounds, diagnostics, clinical picture. First aid and treatment for penetrating eye wounds. Complications of penetrating eye wounds: traumatic aseptic iridocyclitis, purulent iridocyclitis, endophthalmitis , panophthalmitis, phacogenic iridocyclitis,		2

	sympathetic ophthalmia. Pathogenesis, clinical picture of sympathetic ophthalmia (iridocyclitis, neuroretinitis) and treatment. Foreign bodies of the conjunctiva, cornea. Penetrating wounds with intraocular foreign bodies. Diagnostics of foreign bodies in the eye and their localization. Complications of penetrating eye wounds with intraocular foreign bodies: chalcosis , siderosis (clinical picture, treatment). First aid and treatment for penetrating wounds with intraocular foreign bodies. Consequences of penetrating eye wounds. Injury prevention. Burns of the eye and its adnexa, classification. Chemical and thermal burns, first aid and treatment. Burn prevention. Eye damage caused by ultraviolet rays (ophthalmia during electric welding, snow ophthalmia), clinical picture, treatment, prevention. Peculiarities of childhood injuries. Causes of childhood trauma, features (domestic nature of trauma, seasonality, age, gender, nature of damaging agents, severity, etc.). Frequency of penetrating injuries, severe complications and outcomes. Measures for prevention and control of reduction of childhood eye trauma.	UK - 1, 6 OPK - 4, 5, 7, 10, 11 PC - 2, 3, 4, 5, 6	
9	**Pathology of binocular vision. Strabismus: classification, clinical picture, treatment.** Brief information on optics: optical system, focus, diopter as a unit of refraction measurement. Optical system of the eye. Concept of physical and clinical refraction. Types of clinical refraction. Clinic of emmetropia, hypermetropia, myopia. Anisometropia . High progressive myopia, its clinic. Pathogenesis of myopia. Methods of myopia prevention, treatment of progressive myopia. Concept of astigmatism. Principles of ametropia correction. Accommodation, mechanism of accommodation. Causes and clinical manifestations of accommodative asthenopia. Muscular asthenopia. Age-related changes in accommodation. Accommodation spasm and accommodation paralysis. Corrective glasses. Concept of contact and intraocular lenses, indications for their prescription. Correction of presbyopia. Surgical methods of refractive error correction, indications for them. Concept of binocular vision and fusion. Eye muscles, function, innervation. Mechanism of binocular vision. Corresponding and disparate points of the retina. Disturbances in binocular vision. Concomitant and paralytic strabismus. Signs of concomitant strabismus, causes of development. Role of accommodation and convergence discrepancy in strabismus development. Functional scotoma. Modern methods of functional and surgical treatment of concomitant strabismus. Methods of conservative treatment of strabismus (correction of ametropia, direct and reverse occlusion, pleoptic and orthoptic treatment). Reasons for surgical treatment of strabismus. Prevention of concomitant strabismus. Paralytic strabismus, causes, principles of treatment. Differential diagnosis of paralytic and concomitant strabismus.	UK - 1 OPK - 4, 5, 7, 10, 11 PC - 2, 3, 4, 5, 6	2
10	**Diseases of the retina and optic nerve. Tumors of the eyeball. Ophthalmological symptoms in general diseases.**		2

	Classification of retinal diseases: vascular diseases, dystrophic processes, congenital anomalies of retinal development. General characteristics of pathological changes in the vessels and tissue of the retina. The place of diseases of the retina in the general structure of diseases of the organ of vision. Acute obstruction of the central retinal artery and its branches (spasm, thromboembolism). Etiological significance of rheumatic heart disease, atherosclerosis, obliterating endarteritis, sepsis, air and fat embolism in diagnostic studies, pneumothorax, bone fractures. Ophthalmological picture, dynamics of visual functions. Emergency care, timing of its provision. Treatment, outcomes. Thrombosis of the central retinal vein and its branches. Etiological significance of hypertension, atherosclerosis, infectious and septic diseases of the body, coagulopathies , orbital neoplasms, injuries. Ophthalmological picture, dynamics of visual functions. Complications. Treatment methods (principles of anticoagulant therapy, laser treatment). Outcomes. Changes in the retina in hypertension and atherosclerosis. Pathogenesis, clinical picture of different stages of hypertensive retinopathy, age-related features of the ophthalmological picture. Complications, outcomes. The importance of fundus examination for diagnostics, evaluation of treatment effectiveness, prognosis of the disease and prevention of complications, carried out by a general practitioner. Changes in the retina in diseases of the blood and hematopoietic system (anemia, hemoblastoses , hemorrhagic diathesis, etc.) Prognostic value of eye symptoms in assessing the course of the underlying disease. Changes in the retina in diabetes. Pathogenesis, clinical picture of different stages of diabetic retinopathy, complications, outcomes. Principles of modern treatment (diet, new generation oral hypoglycemic agents, insulin preparations, angioprotectors , laser surgery of the retina, vitreoretinal surgery). The importance of fundus examination for diagnosis and evaluation of the effectiveness of diabetes treatment by an endocrinologist, prevention of complications. Retinopathy of prematurity: diagnosis, treatment. Retinal detachment. Etiology in children and adults. The role of localization and type of rupture in the clinical course of the disease. Ophthalmological picture, dynamics of visual functions. Diagnostic methods. Timing and methods of modern surgical interventions. Prognosis. Expertise of working capacity. Pathology of the optic nerve. Classification of optic nerve pathology. Frequency of optic nerve diseases in children and adults.	UK - 1, 6 OPK - 4, 5, 7, 10, 11 PC - 2, 3, 4, 5, 6	
Total hours			**20**

2.3 Thematic plan of practical classes and their content.

Clinical practical classes in the discipline "Ophthalmology" are a mandatory section and represent a type of educational activity directly focused on the professional training of students. During practical classes, students acquire knowledge of clinical anatomy, physiology and methods of examining the organ of vision, master the principles of diagnosis and treatment of various pathological conditions and diseases of the organ of vision, master the skills of assessing the results of an ophthalmological examination, making a diagnosis, drawing up a plan for the examination and treatment of patients with pathology of the organ of vision, improve the ability to draw up an educational medical history and acquire skills in working in an examination room, dressing room and operating room.

No. p/p	**Name of practical topics classes**	**Contents of practical classes**	**Codes being formed competencies and indicators their achievements**	**Types control**	**Labor intensity (hours)**
1	Introduction to ophthalmology. History of ophthalmology. Anatomy and physiology of the organ of vision. The visual analyzer and its functions.	Incoming inspection. **Theoretical part:** Definition and tasks of ophthalmology. Structure and organization of work of ophthalmology department. Methods and techniques of examination of organ of vision. **Practical part:** Practicing skills in studying visual functions.	UK-1: ID 1.1., 1.2., 1.3 UK-6: ID 6.1., 6.3. OPK-4: ID 4.1, 4.3, 4.4, 4.5 OPK-5: ID 5.1, 5.2, 5.3, 5.4, 5.5, 5.6 OPK-7: ID 7.1, 7.2, 7.4, 7.5, 7.6, 7.7 OPK-10: ID 10.2., 10.3 OPK-11: ID 11.1., 11.2., 11.4. PC-2: ID 2.1, 2.2, 2.3, 2.4, 2.5 PC-3: ID 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 PC-4: ID 4.1, 4.2, 4.3 PC-5: ID 5.1, 5.2, 5.3, 5.4, 5.5 PC-6: ID 6.1, 6.2	Solution tasks and exercises, testing in the Moodle system .	5.2
2	Physiological optics. Refractogenesis, age-related features. Refraction. Accommodation. Astigmatism.	**Theoretical part:** Features of clinical, anatomy, physiology of the organ of vision. Methods of studying the organ of vision. **Practical part:** visometry skills .	UK-1: ID 1.1., 1.2., 1.3 UK-6: ID 6.1., 6.3. OPK-4: ID 4.1, 4.3, 4.4, 4.5 OPK-5: ID 5.1, 5.2, 5.3, 5.4, 5.5, 5.6 OPK-7: ID 7.1, 7.2, 7.4, 7.5, 7.6, 7.7 OPK-10: ID 10.2., 10.3 OPK-11: ID 11.1., 11.2., 11.4. PC-2: ID 2.1, 2.2, 2.3, 2.4, 2.5 PC-3: ID 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 PC-4: ID 4.1, 4.2, 4.3	Frontal survey, solution situational tasks and exercises.	5.2

			PC-5: ID 5.1, 5.2, 5.3, 5.4, 5.5 PC-6: ID 6.1, 6.2		
3	Diseases of the eyelids. Diseases of the lacrimal organs. Classification. Diagnostics. Treatment. Conjunctivitis.	**Theoretical part:** Features of clinical, anatomy, and physiology of the visual organ. **Practical part:** Practicing skills for examining the ocular adnexa. External examination. Eversion of the upper eyelid.	UK-1: ID 1.1., 1.2., 1.3 UK-6: ID 6.1., 6.3. OPK-4: ID 4.1, 4.3, 4.4, 4.5 OPK-5: ID 5.1, 5.2, 5.3, 5.4, 5.5, 5.6 OPK-7: ID 7.1, 7.2, 7.4, 7.5, 7.6, 7.7 OPK-10: ID 10.2., 10.3 OPK-11: ID 11.1., 11.2., 11.4. PC-2: ID 2.1, 2.2, 2.3, 2.4, 2.5 PC-3: ID 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 PC-4: ID 4.1, 4.2, 4.3 PC-5: ID 5.1, 5.2, 5.3, 5.4, 5.5 PC-6: ID 6.1, 6.2	Frontal survey, solution situational tasks.	5.2
4	Corneal pathology and sclera.	**Theoretical part:** Features of clinical, anatomy, physiology of the cornea and sclera. Classification, etiology, pathogenesis, diagnostics, principles of therapy. **Practical part:** Patient supervision in the ophthalmology department. Eye examination using lateral illumination and transmitted light.	UK-1: ID 1.1., 1.2., 1.3 UK-6: ID 6.1., 6.3. OPK-4: ID 4.1, 4.3, 4.4, 4.5 OPK-5: ID 5.1, 5.2, 5.3, 5.4, 5.5, 5.6 OPK-7: ID 7.1, 7.2, 7.4, 7.5, 7.6, 7.7 OPK-10: ID 10.2., 10.3 OPK-11: ID 11.1., 11.2., 11.4. PC-2: ID 2.1, 2.2, 2.3, 2.4, 2.5 PC-3: ID 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 PC-4: ID 4.1, 4.2, 4.3 PC-5: ID 5.1, 5.2, 5.3, 5.4, 5.5 PC-6: ID 6.1, 6.2	Frontal survey, solution situational tasks.	5.2
5	Diseases of the vascular tract.	**Theoretical part:** Diseases of the vascular tract. Classification, etiology, pathogenesis, diagnostics, principles of therapy. **Practical part:** Supervision of patients in the ophthalmology department.	UK-1: ID 1.1., 1.2., 1.3 UK-6: ID 6.1., 6.3. OPK-4: ID 4.1, 4.3, 4.4, 4.5 OPK-5: ID 5.1, 5.2, 5.3, 5.4, 5.5, 5.6 OPK-7: ID 7.1, 7.2, 7.4, 7.5, 7.6, 7.7 OPK-10: ID 10.2., 10.3 OPK-11: ID 11.1., 11.2., 11.4. PC-2: ID 2.1, 2.2, 2.3, 2.4, 2.5	Frontal survey, Completing an individual task.	5.2

			PC-3: ID 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 PC-4: ID 4.1, 4.2, 4.3 PC-5: ID 5.1, 5.2, 5.3, 5.4, 5.5 PC-6: ID 6.1, 6.2		
6	Pathology of the lens. Cataract. Congenital cataracts.	**Theoretical part:** Cataract. Classification, etiology, pathogenesis, diagnostics, principles of therapy. Features of surgical treatment of cataract. **Practical part:** Supervision of patients in the ophthalmology department. Biomicroscopy .	UK-1: ID 1.1., 1.2., 1.3 UK-6: ID 6.1., 6.3. OPK-4: ID 4.1, 4.3, 4.4, 4.5 OPK-5: ID 5.1, 5.2, 5.3, 5.4, 5.5, 5.6 OPK-7: ID 7.1, 7.2, 7.4, 7.5, 7.6, 7.7 OPK-10: ID 10.2., 10.3 OPK-11: ID 11.1., 11.2., 11.4. PC-2: ID 2.1, 2.2, 2.3, 2.4, 2.5 PC-3: ID 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 PC-4: ID 4.1, 4.2, 4.3 PC-5: ID 5.1, 5.2, 5.3, 5.4, 5.5 PC-6: ID 6.1, 6.2	Frontal survey, solving situational problems.	5.2
7	Pathology of intraocular pressure. Glaucoma.	**Theoretical part:** Pathology of intraocular pressure. Glaucoma. Classification, etiology, pathogenesis, diagnostics, principles. **Practical part:** Practical part: Practicing skills in studying intraocular pressure using the method of A.N. Maklakov. Supervision of patients in the ophthalmology department.	UK-1: ID 1.1., 1.2., 1.3 UK-6: ID 6.1., 6.3. OPK-4: ID 4.1, 4.3, 4.4, 4.5 OPK-5: ID 5.1, 5.2, 5.3, 5.4, 5.5, 5.6 OPK-7: ID 7.1, 7.2, 7.4, 7.5, 7.6, 7.7 OPK-10: ID 10.2., 10.3 OPK-11: ID 11.1., 11.2., 11.4. PC-2: ID 2.1, 2.2, 2.3, 2.4, 2.5 PC-3: ID 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 PC-4: ID 4.1, 4.2, 4.3 PC-5: ID 5.1, 5.2, 5.3, 5.4, 5.5 PC-6: ID 6.1, 6.2	Frontal survey solution of situational problems.	5.2
8	Injuries to the organ of vision.	**Theoretical part:** Damage to the organ of vision Classification, etiology, pathogenesis, diagnostics, principles of therapy. **Practical part:**	UK-1: ID 1.1., 1.2., 1.3 UK-6: ID 6.1., 6.3. OPK-4: ID 4.1, 4.3, 4.4, 4.5 OPK-5: ID 5.1, 5.2, 5.3, 5.4, 5.5, 5.6 OPK-7: ID 7.1, 7.2, 7.4, 7.5, 7.6, 7.7 OPK-10: ID 10.2., 10.3	Frontal survey, solving situational problems.	5.2

		Supervision of patients in the ophthalmology department.	OPK-11: ID 11.1., 11.2., 11.4. PC-2: ID 2.1, 2.2, 2.3, 2.4, 2.5 PC-3: ID 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 PC-4: ID 4.1, 4.2, 4.3 PC-5: ID 5.1, 5.2, 5.3, 5.4, 5.5 PC-6: ID 6.1, 6.2		
9	Binocular vision. Strabismus: classification, clinical picture, treatment.	**Theoretical part:** Binocular vision. Strabismus: Classification, etiology, pathogenesis, diagnostics, principles of therapy. **Practical part:** Supervision of patients in the ophthalmology department.	UK-1: ID 1.1., 1.2., 1.3 UK-6: ID 6.1., 6.3. OPK-4: ID 4.1, 4.3, 4.4, 4.5 OPK-5: ID 5.1, 5.2, 5.3, 5.4, 5.5, 5.6 OPK-7: ID 7.1, 7.2, 7.4, 7.5, 7.6, 7.7 OPK-10: ID 10.2., 10.3 OPK-11: ID 11.1., 11.2., 11.4. PC-2: ID 2.1, 2.2, 2.3, 2.4, 2.5 PC-3: ID 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 PC-4: ID 4.1, 4.2, 4.3 PC-5: ID 5.1, 5.2, 5.3, 5.4, 5.5 PC-6: ID 6.1, 6.2	Frontal survey, solving situational problems.	5.2
10	Diseases of the retina and optic nerve. Tumors of the eyeball. Ophthalmological symptoms in general diseases.	**Theoretical part:** Indications and technique of the most frequently performed surgical interventions in ophthalmological practice. **Practical part:** Verification of the acquisition of competencies (testing, interview on theoretical issues of the discipline, situational tasks, defense of the educational medical history, acceptance of practical skills and abilities).	UK-1: ID 1.1., 1.2., 1.3 UK-6: ID 6.1., 6.3. OPK-4: ID 4.1, 4.3, 4.4, 4.5 OPK-5: ID 5.1, 5.2, 5.3, 5.4, 5.5, 5.6 OPK-7: ID 7.1, 7.2, 7.4, 7.5, 7.6, 7.7 OPK-10: ID 10.2., 10.3 OPK-11: ID 11.1., 11.2., 11.4. PC-2: ID 2.1, 2.2, 2.3, 2.4, 2.5 PC-3: ID 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 PC-4: ID 4.1, 4.2, 4.3 PC-5: ID 5.1, 5.2, 5.3, 5.4, 5.5 PC-6: ID 6.1, 6.2	Interview (assessment of knowledge of theoretical material), testing in the Moodle system .	5.2
Total hours					**52**

2.4 Interactive forms of learning

interactive methods are widely used in practical classes. training (interactive survey, work in small groups, computer testing, etc.), participation in educational and research and scientific research work.

No.	Clinical Topic practical classes	Labor intensity in hours	Interactive form of learning	Labor intensity in hours in % from the lesson
1	Introduction to ophthalmology. History of ophthalmology. Anatomy and physiology of the organ of vision. The visual analyzer and its functions.	3.8	Interactive survey	30 min (0.5 hours) 13.2%
2	Physiological optics. Refractogenesis, age-related features. Refraction. Accommodation. Astigmatism.	3.8	Computer simulation "3 D system refractions"	30 min (0.5 hours) 13.2%
3	Diseases of the eyelids. Diseases of the lacrimal organs. Classification. Diagnostics. Treatment. Conjunctivitis.	3.8	Interactive survey	30 min (0.5 hours) 13.2%
4	Pathology of the cornea and sclera.	3.8	Computer simulation "3D Anatomy of the eye"	30 min (0.5 hours) 13.2%
5	Diseases of the vascular tract.	3.8	Role play	30 min (0.5 hours) 13.2%
6	Pathology of the lens. Cataract. Congenital cataracts.	3.8	Role play	30 min (0.5 hours) 13.2%
7	Pathology of intraocular pressure. Glaucoma.	3.8	Role play	30 min (0.5 hours) 13.2%
8	Injuries to the organ of vision.	3.8	Role play	30 min (0.5 hours) 13.2%
9	Binocular vision. Strabismus: classification, clinical picture, treatment.	3.8	Role play	30 min (0.5 hours) 13.2%
10	Diseases of the retina and optic nerve. Tumors of the eyeball. Ophthalmological symptoms in common diseases	3.8	Computer simulation "Radical operation on the eye "apple"	30 min (0.5 hours) 13.2%

2.5 Criteria for assessing students' knowledge

The assessment of learning outcomes is carried out in accordance with the “Regulations on the system for assessing the learning outcomes of students of the Federal State Budgetary Educational Institution of Higher Education Amur State Medical Academy of the Ministry of Health of Russia.

The basis for determining the level of knowledge, skills, and abilities are the assessment criteria - completeness and correctness:

- correct, precise answer;
- correct but incomplete or imprecise answer;
- incorrect answer; no answer.

When assigning marks, the classification of errors and their quality are taken into account:

- gross errors;
- similar errors;
- minor errors; shortcomings.

The success of students in mastering the topics of the discipline "Ophthalmology" is determined by the quality of mastering knowledge, skills and practical abilities, the assessment is given on a five-point scale: "5" - excellent, "4" - good, "3" - satisfactory, "2" - unsatisfactory.

Evaluation criteria

Quality of development	Mark on a 5-point scale
90 - 100%	"5"
80 - 89%	"4"
70 - 79%	"3"
less than 70%	"2"

Incoming inspection

Conducted during the first lesson, includes: solving problems and exercises; testing in the Moodle system https://educ-amursma.ru/mod/quiz/view.php?id=6067 . The test control includes questions on the ophthalmology course.

Current control

Current control includes initial and final control of knowledge.

Initial control **is** carried out by the teacher at the beginning of each lesson in the form of a frontal survey, solving problems and exercises.

Final control – includes control over the technique of performing the experiment and drawing up the protocol , written work on options, testing in the system https://educ-amursma.ru/mod/quiz/view.php?id=18177 .

The final grade during the current knowledge assessment is given on the day of the lesson, as the arithmetic mean result for all types of activities provided for in the given lesson of the discipline’s work program.

Criteria for assessing the oral response

- **“5” (excellent)** – the student demonstrates deep and complete knowledge of the educational material, does not allow inaccuracies or distortions of facts when presenting, presents the material in a logical sequence, is well oriented in the presented material, and can provide justification for the judgments expressed.
- **“4” (good)** - the student has mastered the educational material in full, is well oriented in the educational material, presents the material in a logical sequence, but makes inaccuracies when answering.
- **“3” (satisfactory)** – the student has mastered the basic principles of the topic of the practical lesson, but when presenting the educational material, he/she makes inaccuracies, presents it incompletely

and inconsistently, requires leading questions from the teacher to present it, and has difficulty substantiating the judgments expressed.

- **"2" (unsatisfactory)** – the student has fragmented and unsystematic knowledge of the educational material, is unable to distinguish between the main and the secondary, makes mistakes in defining basic concepts, distorts their meaning, and cannot independently present the material.

Assessment criteria for the practical part

- **"5" (excellent)** – the student has fully mastered the practical skills and abilities provided for by the course work program.
- **"4" (good)** – the student has fully mastered the practical skills and abilities provided for in the course program, but makes some inaccuracies.
- **"3" (satisfactory)** – the student has only some practical skills and abilities.
- **"2" (unsatisfactory)** – the student demonstrates the performance of practical skills and abilities with gross errors.

Criteria for assessing independent extracurricular work:

- the level of student mastery of the educational material;
- the completeness and depth of general educational concepts, knowledge and skills on the topic being studied, to which this independent work relates;
- development of universal, general professional and professional competencies (ability to apply theoretical knowledge in practice).
- the problems were solved correctly, the exercises were completed, and the test assignments were answered accurately – "passed".
- not solved correctly , exercises were not completed correctly, test assignments were not answered accurately – "failed".

Criteria for evaluation of educational medical history:

- "5" – preparation of the educational medical history in accordance with the requirements.
- "4" - in the educational medical history, the student makes inaccuracies in the description of the ophthalmological status, the formulation of the clinical diagnosis, the conduct of a differential diagnosis, the appointment of examination and treatment.
- "3" - the medical history is filled with errors, written in illegible handwriting, is uninformative , there are inaccuracies in the formulation of the clinical diagnosis, its justification and differential diagnosis, and in the preparation of the examination and treatment plan.
- "2" - the medical history is filled with gross errors, written in illegible handwriting, is uninformative, and gross errors have been made in all main sections.

Essay evaluation criteria:

- **"5" (excellent) –** awarded to a student if he has prepared a complete, detailed, and formatted according to requirements, abstract on the chosen topic, presented his work in the form of a report with a computer presentation, and answered questions on the topic of the report;
- **"4" (good) –** awarded to a student for a complete, detailed essay that is formatted according to requirements, but poorly presented;
- **"3" (satisfactory) –** the abstract does not contain information on the issue being studied in full, is formatted with errors, and is poorly presented;
- **"2" (unsatisfactory)** – given to a student if the abstract is not written, or is written with gross errors, the report and computer presentation are not prepared, or their content does not correspond to the topic of the abstract.

Working off disciplinary debts.

1. If a student misses a class for a valid reason, he/she has the right to make it up and receive the maximum grade provided for by the course work program for that class. A valid reason must be documented.
2. If a student misses a class for an unjustified reason or receives a "2" mark for all activities in the class, he/she is required to make it up. In this case, the mark received for all activities is multiplied by 0.8.
3. If a student is excused from a class at the request of the dean's office (participation in sports, cultural and other events), then he is given a grade of "5" for this class, provided that he submits a report on the completion of mandatory extracurricular independent work on the topic of the missed class.

Criteria for assessing midterm assessment.

Midterm assessment (credit) is designed to assess the degree of achievement of planned learning outcomes upon completion of the study of a discipline and allows for an assessment of the level and quality of its mastery by students.

The students' success in mastering the discipline is assessed on a 5-point scale: "5" – excellent, "4" – good, "3" – satisfactory, "2" – unsatisfactory.

"Excellent" - for the depth and completeness of mastery of the content of the educational material, in which the student easily navigates, for the ability to connect theoretical questions with practical ones, express and justify their judgments, correctly and logically present the answer; when testing, allows up to 10% of erroneous answers. Practical skills and abilities provided for by the working program of the discipline are fully mastered.

"Good" - the student has fully mastered the educational material, is oriented in it, correctly states the answer, but the content and form have some inaccuracies; during testing allows up to 20% of erroneous answers. Completely practical skills and abilities provided by the working program of the discipline, but allows some inaccuracies.

"Satisfactory" - the student has mastered the knowledge and understanding of the main provisions of the educational material, but presents it incompletely, inconsistently, does not know how to express and justify his/her judgments; during testing, allows up to 30% of erroneous answers. Has only some practical skills and abilities.

"Unsatisfactory" - the student has fragmented and unsystematic knowledge of the educational material, is unable to distinguish between the main and secondary, makes mistakes in defining concepts, distorts their meaning, presents the material in a disorderly and uncertain manner, and makes more than 30% of erroneous answers during testing. Performs practical skills and abilities with gross errors.

A student can claim to receive an "excellent" grade automatically if he/she has won a prize in disciplinary or interdisciplinary Olympiads (university, regional) and has an average grade for the current academic performance of at least 4.8 points **.** A student can refuse the "automatic" grade and take the test together with the group on a general basis.

Interim assessment is carried out through a system of passing a test in 3 stages:

1. Testing in the Moodle system https://educ-amursma.ru/mod/quiz/view.php?id=18177 .
2. Completion of the practical part of the discipline in full: involves attending all practical classes, performing experiments with the execution of a protocol. Based on the assessments of the current control of knowledge, skills, and abilities in practical classes, the average score of current academic performance is calculated, which is recorded in the educational (electronic) journal. The average score of the current knowledge control is taken into account during the midterm assessment.
3. Delivery of practical skills (control of the level of development of competencies). Includes 10 options, containing 10 practical questions each.

Assessment criteria for midterm assessment

Stages	Mark out of 5 point scale	Binary scale

Test control in the system " Moodle "	3-5	**5 – "excellent" 4 - "good" 3 – "satisfactory"**
Complete completion of the practical part of the course	3-5	
Delivery of practical skills (control of the formation of competencies)	3-5	
Test control in the system " Moodle "	2	**2 – "unsatisfactory"**
Complete completion of the practical part of the course	2	
Delivery of practical skills (control of the formation of competencies)	2	

2.6 Independent work of students: in-class and out-of-class.

The organization of independent classroom work of students is carried out with the help of methodological instructions for students, which contain educational goals, a list of the main theoretical questions for study, a list of practical work and the methodology for conducting it, instructions for the presentation of the results obtained, their discussion and conclusions, assignments for self-control with standard answers, a list of recommended literature.

From 1/4 to 1/2 of the practical lesson time is allocated for independent work of students: conducting research, recording results, discussing them, formulating conclusions, completing individual assignments. The preparatory stage, or the formation of an approximate basis for actions, begins for students outside of class time when preparing for the practical lesson, and ends in class.

All subsequent stages are carried out in class. The stage of materialized actions (solving situational and clinical problems using an algorithm or without an algorithm, with an unknown answer in advance) is carried out independently. The teacher, if necessary, provides consultation, provides assistance and simultaneously monitors the quality of students' knowledge and their ability to apply existing knowledge to solve assigned problems.

No. p/p	**Topic practical lesson**	**Time on preparing a student for a lesson**	**Forms of extracurricular activities independent work**	
			Mandatory and identical for all students	**At the student's choice (abstract on topics)**
1	Introduction to ophthalmology. History of ophthalmology. Anatomy and physiology of the organ of vision. The visual analyzer and its functions.	3.6 hours	Practicing inspection skills.	Abstract on the topic, stand design, making a model on the topic.
2	Physiological optics. Refractogenesis, age-related features. Refraction. Accommodation. Astigmatism.	3.6 hours	Preparation for practical classes (reading lectures, basic and additional literature); drawing up a plan for answering questions.	Abstract on the topic, creation of a computer presentation, design of a stand, production of a dummy on the topic.
3	Diseases of the eyelids. Diseases of the lacrimal organs. Classification. Diagnostics.	3.6 hours	Preparation for practical classes (reading lectures, basic and additional literature);	Abstract on the topic, creation of a computer presentation, design of a stand, production of a dummy on the topic.

	Treatment. Conjunctivitis.		drawing up a plan for answering questions.	
4	Pathology of the cornea and sclera.	3.6 hours	Review of periodicals or Internet sources on this issue.	Abstract on the topic, stand design, making a model on the topic.
5	Diseases of the vascular tract.	3.6 hours	Preparation of educational medical history.	An abstract on the topic, creating a computer presentation, designing a stand, an abstract on a narrower problem, preparing a report for the Student Scientific Society, reviewing periodicals or Internet sources on this problem, making a dummy on the topic.
6	Pathology of the lens. Cataract. Congenital cataracts.	3.6 hours	Preparation of educational medical history.	An abstract on the topic, creating a computer presentation, designing a stand, an abstract on a narrower problem, preparing a report for the Student Scientific Society, reviewing periodicals or Internet sources on this problem, making a dummy on the topic.
7	Pathology of intraocular pressure. Glaucoma.	3.6 hours	Preparation of educational medical history.	An abstract on the topic, creating a computer presentation, designing a stand, an abstract on a narrower problem, preparing a report for the Student Scientific Society, reviewing periodicals or Internet sources on this problem, making a dummy on the topic.
8	Injuries to the organ of vision.	3.6 hours	Preparation of educational medical history.	An abstract on the topic, creating a computer presentation, designing a stand, an abstract on a narrower problem, preparing a report for the Student Scientific Society, reviewing periodicals or Internet sources on this problem, making a dummy on the topic.
9	Binocular vision. Strabismus: classification, clinical picture, treatment.	3.6 hours	Preparation of educational medical history.	An abstract on the topic, creating a computer presentation, designing a stand, an abstract on a narrower problem, preparing a report for the Student Scientific Society, reviewing periodicals or Internet sources on this problem,

				making a dummy on the topic.
10	Diseases of the retina and optic nerve. Tumors of the eyeball. Ophthalmological symptoms in general diseases.	3.6 hours	-	An abstract on the topic, creating a computer presentation, designing a stand, an abstract on a narrower problem, preparing a report for the Student Scientific Society, reviewing periodicals or Internet sources on this problem, making a dummy on the topic.
Labor intensity in hours			**24 hours**	**12 hours**
Total labor intensity in hours			**36 hours**	

2.7 Research (project) work

Research (project) work of students is a mandatory section of the discipline and is aimed at the comprehensive formation of universal, general professional and professional competencies of students. Research (project) work involves the study of specialized literature and other scientific and technical information on the achievements of domestic and foreign science and technology in the relevant field of knowledge, participation in scientific research, etc. The topics are determined by students independently or in consultation with the teacher.

Students' research (project) work includes:

1. Independent study of additional literature on the chosen topic.
2. Compiling reviews of literature and Internet resources on selected topics.
3. Reports and presentations on the history of the study of the issue.
4. Mastering paraclinical examination methods: ultrasound, X-ray, magnetic resonance imaging. Examination of healthy people and patients with analysis of results.
5. Analysis of radiological and magnetic resonance examination methods for various pathologies.
6. Working with archival documents, analysis of the clinic, examination results, etc.
7. Collection and analysis of clinical data for a specific pathology, analysis of treatment methods.
8. Preparation of thematic meetings of the student circle with abstract reports and results of independent work.
9. Preparing reports for the final student conference.

List of recommended topics for research (project) work:

1. Assessment of the immune status in patients with various forms of chronic uveitis.
2. Assessment of the immunological status in patients with recurrent keratitis.
3. Options for medical and surgical treatment of open-angle and closed-angle glaucoma.
4. Epidemiology of allergic conjunctivitis in the Amur region. Possibilities and effectiveness of conservative treatment.

To evaluate research work, a binary assessment scale is adopted: “pass”, “fail”.

Criteria for assessing students’ research (project) work:

- the material on the results of the research in the report is presented in detail, the specialized literature is well-developed, scientific and technical information on the achievements of domestic and foreign science and technology in the relevant field of knowledge is studied - “passed”.
- the material on the results of the research in the report is not presented accurately enough, the special literature is poorly studied, the scientific and technical information on the achievements of domestic and foreign science and technology in the relevant field of knowledge is not studied - "failed".

3. EDUCATIONAL, METHODOLOGICAL, MATERIAL, TECHNICAL AND INFORMATION SUPPORT OF DISCIPLINE

3. Educational, methodological and informational support of the discipline

3.1 Main literature:

1. Egorova, E. A. Ophthalmology: textbook / ed. E. A. Egorova. - 2nd ed., revised . and additional - Moscow: GEOTAR-Media, 2021. - 272 p.: ill. - 272 s. - ISBN 978-5-9704-5976-8. - Text: electronic (date of access: 05/05/2021).
   Access mode: by subscription. http://www.studmedlib.ru/book/ISBN9785970459768.html
2. Sidorenko, E. I. Ophthalmology: textbook / edited by Sidorenko E. I. - Moscow: GEOTAR-Media, 2018. - 656 p. - ISBN 978-5-9704-4620-1. - Text: electronic (date accessed: 05.05.2021).
   Access mode: by subscription. http://www.studmedlib.ru/book/ISBN9785970446201.html

3.2 Further reading

1. Takhchidi , H. P. Clinical norms. Ophthalmology / Kh. P. Takhchidi , N. A. Gavrilova, N. S. Gadzhieva, etc. - Moscow: GEOTAR-Media, 2020. - 272 p. - ISBN 978-5-9704-5728-3. - Text: electronic. Access mode: http://www.studmedlib.ru/book/ISBN9785970457283.html
2. Avetisov, S. E. Ophthalmology. National leadership / ed. Avetisova S. E. Egorova E. A, Moshetova L. K., Neroeva V. V., Takhchidi H. P. - Moscow: GEOTAR-Media, 2019. - 752 p. - ISBN 978-5-9704-5125-0. Access mode:
   http://www.studmedlib.ru/book/ISBN9785970451250.html
3. Sidorenko, E. I. Ophthalmology. Guide to practical classes: textbook / edited by E. I. Sidorenko - Moscow: GEOTAR-Media, 2019. - 304 p. - ISBN 978-5-9704-5052-9. Access mode: by subscription. http://www.studmedlib.ru/book/ISBN9785970450529.html
4. Takhchidi , H. P. Handbook of an ophthalmologist / H. P. Takhchidi , N. A. Gavrilova, N. S. Gadzhieva [et al.]. - Moscow: GEOTAR-Media, 2021. - 224 p. (Series "Handbook of an ophthalmologist") - ISBN 978-5-9704-6153-2 .. Access mode:
   http://www.studmedlib.ru/book/ISBN9785970461532.html
5. Loskutov, I. A. Symptoms and syndromes in ophthalmology / Loskutov I. A., Belikova E. I., Korneeva A. V. - Moscow: GEOTAR-Media, 2021. - 256 p. - ISBN 978-5-9704-6179-2. - Text: electronic (date accessed: 05.05.2021). - Access mode : by subscription.
   http://www.studmedlib.ru/book/ISBN9785970461792.html

3.3 Educational and methodological support for the discipline prepared by the department staff:

Educational aids (Educational Methodology):

1. Vydrov A.S., Naryshkina S.V., Shtilerman A.L., Tanchenko O.A. Diabetic retinopathy (study guide). Recommended by the Educational and Methodological Association for Medical and Pharmaceutical Education of Universities of Russia. Blagoveshchensk: Printing House OOO PK Odeon, 2014, 115 p.

Electronic and digital technologies:

1. **Online course on the subject** "Ophthalmology" in the EIS FGBOU VO Amur State Medical Academy https://educ-amursma.ru/course/view.php?id=119 .

Characteristics of modules in electronic information and educational course

Educational	Controlling

Theoretical (lecture) material, video experiments, scientific and educational films	Methodological recommendations for students on independent extracurricular work.
Methodological recommendations for students for practical classes. Methodological recommendations for solving problems and exercises on the topics of the discipline.	List of recommended topics for abstracts and guidelines for abstract design.
Reference material, tables of standard values.	Tests of entrance, current and final knowledge control.

2. **Multimedia presentations** (Microsoft Power Point 2016), to lecture-type classes in accordance with the thematic lecture plan.
   - Physiological optics. Refractogenesis, age-related features. Refraction. Accommodation. Astigmatism.
   - Diseases of the eyelids. Diseases of the lacrimal organs. Classification. Diagnostics. Treatment. Conjunctivitis.
   - Pathology of the cornea and sclera.
   - Diseases of the vascular tract.
   - Pathology of the lens. Cataract. Congenital cataracts.
   - Pathology of intraocular pressure. Glaucoma.
   - Injuries to the organ of vision.
   - Pathology of binocular vision. Strabismus: classification, clinical picture, treatment.
   - Diseases of the retina and optic nerve. Tumors of the eyeball. Ophthalmological symptoms in general diseases.

3. **Video materials:**
   - cataract phacoemulsification ;
   - intracapsular cataract extraction;
   - extracapsular cataract extraction;
   - enucleation;
   - sinustrabeculectomy with posterior scleral trephination.

3.4 Equipment used for the educational process

Item No.	Name	Quantity
1	**The office of the professor of the department**	
	Personal computer	1
	A set of multimedia presentations of the course of lectures	1
	Media projector	
	Ophthalmic laser	1
		1
3	**Examination room of the eye department of the State Autonomous Healthcare Institution of the Arkhangelsk Region Bishkek City Clinical Hospital**	1 1
	Slit lamp	1
	Pachymeter	1
	Autorefractometer	1
	Maklakov tonometer	1
	Pneumo-ophthalmometer	1
	Ultrasound machine	2

	Set of optical lenses Skiascopic rulers Computer Perimeter	1
4	**Dressing room of the eye department of the State Autonomous Healthcare Institution of the Arkhangelsk City Clinical Hospital** Set of instruments for dressing an ophthalmological patient Operating ophthalmological microscope	 5
5	**Ophthalmological operating room of the State Autonomous Healthcare Institution of the Arkhangelsk City Clinical Hospital** Set of instruments for operations on the organ of vision Phacoemulsifier Operating ophthalmological microscope	 2 2 2
7	**Study room #1-3** Laptop Multimedia video projector Table for determining visual acuity Roth's apparatus Trial frame Set of optical lenses Electronic learning programs, multimedia presentations, electronic and paper spreadsheets Reverse ophthalmoscope Rapkin tables Desk lamp A set of radiographs, tomograms, computed tomograms, magnetic resonance tomograms Forster's perimeter Eyeball dummies	 1 1 2 2 2 2 25 1 2 2 150 2 4
8	**Department Assistants' Office** Computer Laptop Multimedia video projector	 1 1 1
9	**Corridor** Stands	 3

3.5. Professional databases, information and reference systems, electronic educational resources.

No. p/p	Resource name	Resource Description	Access	Resource address
Electronic library systems				
1	"Student Consultant" Electronic library of the medical university.	For students and teachers of medical and pharmaceutical universities. Provides access to electronic versions of textbooks, teaching aids and periodicals.	library, individual access	http :// www . studmedlib.ru/
2	"Doctor's Consultant" Electronic Medical Library.	The materials posted in the library have been developed by leading Russian specialists based on modern scientific knowledge (evidence-based medicine). The information has been prepared taking into account the position of the scientific and practical	library, individual access	http://www.rosmed-lib.ru/cgi-bin/mb4x

		medical society (world, European and Russian) in the relevant specialty. All materials have undergone mandatory independent review.		
3	PubMed	Free search engine in the largest medical bibliographic database MedLine . Documents medical and biological articles from the specialized literature, and also provides links to full-text articles.	library, free access	http:// www. ncbi.nlm.nih . gov/ pubmed /
4	Oxford Medicine Online.	A collection of Oxford medical publications, bringing together over 350 titles into a single, cross-searchable resource. Publications include The Oxford Handbook of Clinical Medicine and The Oxford Textbook of Medicine , the electronic versions of which are constantly updated.	library, free access	http://www.oxfordmedicine.com
5	Human Biology Knowledge Base	Reference information on physiology , cell biology , genetics , biochemistry , immunology , pathology . (Resource of the Institute of Molecular Genetics of the Russian Academy of Sciences .)	library, free access	http://humbio.ru/
6	Medical online library	Free reference books, encyclopedias, books, monographs, abstracts, English-language literature, tests.	library, free access	http://medlib.ru/
Information systems				
7	Russian Medical Association	Professional Internet resource. Objective: to facilitate the implementation of effective professional activities of medical personnel. Contains the charter, personnel, structure, rules of entry, information about the Russian Medical Union.	library, free access	http://www.rmass.ru/
8	Web medicine.	The site presents a catalog of professional medical resources, including links to the most authoritative subject sites, journals, societies, as well as useful documents and programs. The site is intended for doctors, students, employees of medical universities and scientific institutions.	library, free access	http : //webmed.irkutsk.ru/
Databases				
9	World Health Organization	The site contains news, statistics on countries that are members of the World Health Organization, fact sheets, reports, WHO publications and much more.	library, free access	http://www.who.int/ru/
10	Ministry of Science and Higher Education of the Russian Federation.	The website of the Ministry of Science and Higher Education of the Russian Federation contains news, newsletters, reports, publications and much more.	library, free access	http://www.minobrnauki.gov.ru

11	Ministry of Education of the Russian Federation.	The website of the Ministry of Education of the Russian Federation contains news, newsletters, reports, publications and much more.	library, free access	https://edu.gov.ru/
12	Federal portal "Russian education"	A single window for access to educational resources. This portal provides access to textbooks on all branches of medicine and health care.	library, free access	http: // www . edu.ru/ http://window.edu.ru/catalog/?p rubr =2.2.81.1
Bibliographic databases				
13	Database "Russian Medicine"	It is created in the Central Scientific and Methodological Library and covers the entire collection, starting from 1988. The database contains bibliographic descriptions of articles from domestic journals and collections, dissertations and their abstracts, as well as domestic and foreign books, collections of institute proceedings, conference materials, etc. Thematically, the database covers all areas of medicine and related areas of biology, biophysics, biochemistry, psychology, etc.	library, free access	http://www.scsml.rssi.ru/
14	eLIBRARY.RU	Russian information portal in the field of science, technology, medicine and education, containing abstracts and full texts of more than 13 million scientific articles and publications. The eLIBRARY.RU platform provides electronic versions of more than 2,000 Russian scientific and technical journals, including more than 1,000 open access journals.	library, free access	http://elibrary.ru/defaultx.asp
15	Portal Electronic library of dissertations	Currently, the Electronic Library of Dissertations of the Russian State Library contains more than 919,000 full texts of dissertations and abstracts.	library, free access	http://diss.rsl.ru/?menu=disscatalog/
16	Medline.ru	Medical and biological portal for specialists. Biomedical journal. Last updated February 7, 2021.	library, free access	http://www.medline.ru

3 .6. List of software (commercial software products)

No. p/p	List of software (commercial software products)	Details of supporting documents
1	MS Operating System Windows 7 Pro	License number 48381779
2	MS Operating System Windows 10 Pro	CONTRACT No. UT-368 from 09.21.2021
3	MS Office	License number: 43234783, 67810502, 67580703, 64399692, 62795141, 61350919
4	Kaspersky Endpoint Security for business – Standard Russian Edition. 50-99 Node 2 year Educational Renewal License	Agreement 165A dated November 25, 2022

5	1C Accounting and 1C Salary	LICENSE AGREEMENT 612/L dated 02.02.2022
6	1C: PROF University	LICENSE AGREEMENT No. ЦБ-1151 dated 01.14.2022
7	1C: PROF Library	LICENSE AGREEMENT No. 2281 dated 11.11.2020
8	Consultant Plus	Agreement No. 37/C dated 02/25/2022
9	Contour.Tolk	Agreement No. K007556/22 dated 09/19/2022
10	E-learning environment 3 KL (Russian Moodle)	Agreement No. 1362.3 dated November 21, 2022
11	Astra Linux Common Edition	Agreement No. 142 A dated September 21, 2021
12	Information system "Plans"	Agreement No. 9463 dated May 25, 2022
13	1C: Document Management	Agreement No. 2191 dated 10/15/2020
14	R7-Office	Agreement No. 2 KS dated 12/18/2020

List of freely distributed software

No. p/p	List of freely distributed soft-ware	Links to license agreement
1	Yandex Browser	Freely distributed License agreement for the use of Yandex Browser programs https://yandex.ru/legal/browser_agreement/
2	Yandex.Telemost	Freely distributed License Agreement for the Use of Programs https://yandex.ru/legal/telemost_mobile_agreement/
3	Dr.Web CureIt !	Freely distributed License Agreement: https://st.drweb.com/static/new-www/files/license_CureIt_ru.pdf
4	OpenOffice	Freely distributed License: http://www.gnu.org/copyleft/lesser.html
5	LibreOffice	Freely distributed License: https://ru.libreoffice.org/about-us/license/
6	VK Calls	Freely distributed https://vk.com/license

3.7. Resources of the information and telecommunications network "Internet"

- Library of Amur State Medical Academy. Access mode: https://amursma.ru/obuchenie/biblioteki/biblioteka-amurskoy-gma/
- Electronic library system "Student consultant". Access mode: http://www.studmedlib.ru/cgi-bin/mb4x
- Electronic library of medical literature. Access mode: https://www.books-up.ru/ru/entrance/97977feab00ecfbf9e15ca660ec129c0/

4. ASSESSMENT TOOLS FUND

4.1. Current test control (input, initial, output), final.

4.1.1 Examples of entrance control test tasks (with standard answers)

Test assignments are located in the Moodle system . Access mode: https://educ-amursma.ru/mod/quiz/view.php?id=6067 .
Total number of tests – 100.

1.THE THINEST WALL OF THE ORBIT IS:
1. outer wall
2. top wall
3. inner wall
4. bottom wall
5. upper and inner

Answer: 3

2. THE OPTIC NERVE CANAL SERVES FOR THE PASSAGE OF:
1. optic nerve
2. abducens nerve
3. oculomotor nerve
4. central retinal vein
5. frontal artery

Answer:1

3.THE LACRIMAL SAC IS LOCATED:
1) inside the eye socket
2) outside the eye socket
3) partly inside and partly outside the orbit
4) in the maxillary sinus
5) in the middle cranial fossa

Answer: 3

4.1.2 Examples of test tasks for initial control (with standard answers)

1. THE CORNEA CONSISTS OF:
1) two layers
2) three layers
3) four layers
4) five layers
5) six layers

Answer: 4

2. THE FUNCTIONAL CENTER OF THE RETINA IS:
1) optic disc
2) central fossa
3) dentate line zone
4) vascular bundle
5) juxtapapillary zone

Answer: 2

3. THE VASCULAR TRACT PERFORMS:
1) trophic function

2) light refraction function
3) light perception function
4) protective function
5) support function

Answer: 1

4.1.3 Examples of test tasks for final control (with standard answers)

Test assignments are located in the Moodle system . Access mode: https://educ-amursma.ru/mod/quiz/view.php?id=18177 .
Total number of tests – 200.

1.THE THINEST WALL OF THE ORBIT IS:

1) outer wall
2) top wall
3) inner wall
4) bottom wall
5) upper and inner

Answer: 3

2. THE OPTIC NERVE CANAL SERVES FOR THE PASSAGE OF:

1) optic nerve
2) abducens nerve
3) oculomotor nerve
4) central retinal vein
5) frontal artery

Answer:1

3.THE LACRIMAL SAC IS LOCATED:

1) inside the eye socket
2) outside the eye socket
3) partly inside and partly outside the orbit
4) in the maxillary sinus
5) in the middle cranial fossa

Answer: 3

4.1.4 Examples of test tasks for assessing practical skills (with standard answers)

1. ABSOLUTE ACCOMMODATION IS ACCOMMODATION MEASURED AT:

1) switched off convergence (occlusion of one of the eyes)
2) two open eyes
3) current convergence
4) partially disabled convergence

Answer: 1

2. CHRONIC INFLAMMATION OF THE MEIBOMIAN GLANDS IS :

1) barley
2) chalazion
3) eyelid abscess
4) internal barley
5) papilloma

Answer: 2

3. DIFFUSE ACUTE INFLAMMATION OF ORBITAL CELLULAR TISSUES IS :
   1) osteoperiostitis
   2) phlegmon
   3) abscess
   4) furuncle
   5) barley

Answer: 2

4.1.5 Examples of test tasks for the final assessment (with standard answers)

1. SYPHILITIS KERATITIS IS ACCOMPANIED BY:
   1) early onset of pain and photophobia
   2) formation of adhesions
   3) stromal film, densest in the center
   4) visual acuity decreases
   5) all of the above is correct

Answer: 5

2. FOR DIAGNOSTICS OF DRY EYE SYNDROME:
   1) examination of the exposed strip where there should be a continuous flow of tears
   2) Schirmer's test , based on the rate of wetting of a strip of filter paper attached above the marginal border of the eyelid
   3) a dye test consisting of dropping a known amount of dye into the solution fluorescent , followed by fluorometry, staining with Bengal rose
   4) Rose Bengal coloring
   5) all of the above is correct

Answer: 5

3. IN UVEITIS THE FOLLOWING IS AFFECTED:
   1) retina, optic nerve, ciliary body
   2) optic nerve
   3) ciliary body
   4) lacrimal gland
   5) orbital bones

Answer: 1

4.2 Clinical situational tasks

Task number 1.

A 35-year-old patient came to the clinic complaining of severe pain in the right eye, which intensifies at night, and photophobia. The anamnesis showed that the patient had been undergoing outpatient treatment for flu for 5 days. Objectively: the right eye is a mixed injection, exudate deposits in the form of small gray dots are determined on the back surface of the cornea, the pupil is irregularly shaped, the edge of the iris is fused with the lens, and floating opacities are found in the vitreous body. Your diagnosis. Treatment.

Answer: Acute iridocyclitis of viral etiology. Etiotropic treatment with antiviral drugs, instillations of mydriatics , nonsteroidal anti-inflammatory drugs, antihistamines, general strengthening treatment, correction of immune status.

Task number 2.

A 60-year-old woman consulted an ophthalmologist complaining of pain in her left eye and left half of her head, nausea, vomiting, and redness of her left eye. Her medical history shows that she had no previous complaints, and these complaints appeared after a long period of washing clothes. An objective examination

revealed congestive vascular injection in the left eye, corneal epithelial edema, and a shallow anterior chamber; the pupil is unevenly dilated, visual acuity is 0.1 and cannot be corrected . Intraocular pressure = 56 mm Hg . Your diagnosis. Treatment.

Answer:

Acute attack of glaucoma. Relief of an acute attack according to the scheme:

- Analgesics (lytic mixture) are administered intravenously or intramuscularly.
- Miotics (pilocarpine 1-2%, 1 drop in the affected eye: 4 times every 5 minutes; 4 times every 15 minutes; 4 times every hour. After 6 hours, the frequency of instillations is reduced to 6 times a day). □ beta-blockers (timolol maleate 0.5% 2-3 times a day).
- Inside:
- Diacarb 1-2 tablets of 0.25 g once, then ½ - 1 tablet x 3-4 times a day.
- glycerol (at the rate of 1-1.5 g per kg of body weight) mixed with juice (cranberry, lemon) or with the addition of ascorbic acid 2 times a day. Instead of glycerol , 20% mannitol (0.5-2 g per kilogram of body weight) can be administered intravenously by drip over 45 minutes. □ distraction therapy (hot foot baths, leeches on the temple on the side of the sore eye). Conservative treatment of an acute attack of glaucoma is carried out for 24 hours, after which surgical treatment is indicated - iridectomy .

Task number 3.

A 28-year-old man received a blow to the head two days ago. Today he is concerned about the loss of vision in his right eye. On external examination, the upper eyelid of the right eye is drooping. The eyeball is deviated outward and downward. The pupil is dilated and does not react to light. Visual acuity is equal to light perception , although the red reflex from the fundus is clearly visible. The optic disc is pale, the borders are clear. What is your diagnosis?

Answer: Oculomotor nerve paresis, damage to the optic nerve in the orbit.

4.3 List of practical skills that a student should have after mastering the discipline.

1. Methods of external examination of tissues surrounding the eye.
2. Immobilization (fixation) of children during examination of their eyes.
3. Examination of the lacrimal organs and lacrimal ducts.
4. Determining the position of the lacrimal points.
5. Examination of the lacrimal sac.
6. Canalicular and nasal tests.
7. X-ray of the lacrimal ducts.
8. Examination of the lacrimal gland.
9. Washing out the lacrimal ducts.
10. Examination of the conjunctiva of the upper, lower eyelids and fornices.
11. Single and double eversion of the eyelid.
12. Side lighting method.
13. Combined method of examination of the anterior segment of the eye
14. Examination of the eye in transmitted light.
15. Reverse and direct ophthalmoscopy.
16. Ophthalmoscopy in red-free light.
17. Ophthalmochromoscopy .
18. Biomicroscopy .
19. Gonioscopy .
20. Measurement of intraocular pressure using Maklakov, Goldman tonometer, and palpation .
21. Simplified topography according to Nesterov.
22. Determination of corneal sensitivity.

23. Study of pupillary response to light.
24. Study of visual acuity in children and adults at a distance and near with an approximate determination of refraction.
25. Perimetry, approximate, control, instrumental.
26. Campimetry .
27. Study of twilight vision.
28. Study of color vision using the orientation method and polychromatic tables.
29. Subjective method of determining refraction using corrective glasses.
30. Determination of refraction by skiascopy.
31. Refractometry.
32. Correction of ametropia, anisometropia , astigmatism, presbyopia.
33. Study of the volume of accommodation, diagnosis of accommodation disorders.
34. Determination of the primary and secondary angle of strabismus.
35. Hirschberg method .
36. Diagnosis of binocular vision disorders using a four-point color test and synaptophore .
37. Exophthalmometry .
38. Echobiometry .
39. Ultrasound of the eye and orbit.
40. Electrophysiological methods for studying the retina and optic nerve.
41. Instillation of drops into the conjunctival sac, rinsing of the conjunctival sac.
42. Applying ointment behind the eyelids, lubricating the edges of the eyelids with ointment.
43. Eyelid massage.
44. Technique of smear, scraping, and sowing from the conjunctival cavity.
45. Subconjunctival injections.
46. Cryotherapy of corneal infiltrates and ulcers
47. Removal of foreign bodies from the conjunctiva and cornea.
48. Radiographic technique according to Komberg-Baltin and Vogt.
49. Emergency and planned operations for eye diseases and injuries.
50. Chalazion removal.
51. Introduction of corticosteroids into the chalazion.
52. Excision of papillomas and cysts of the eyelid.
53. Correction of spastic inversion of the lower eyelid.
54. Primary surgical treatment of non-penetrating and penetrating wounds of the eyelids.

5.4 List of questions for the assessment test

1. Phylo- and ontogenesis of the visual organ.
2. The main stages of the phylogenesis of the visual organ.
3. Ontogenesis of the visual organ.
4. Light sensitivity. Peripheral field of vision.
5. Central vision, color perception, binocular and depth vision.
6. The membranes of the eyeball (fibrous capsule, choroid, retina).
7. The optical apparatus of the eye (cornea, lens, vitreous body).
8. Eye socket.
9. Oculomotor muscles.
10. Eyelids.
11. Connective tissue of the eye.
12. Lacrimal organs.
13. Blood circulation and innervation of the eye.
14. External examination.
15. Method of side and focal illumination.
16. Research technique in transmitted light.
17. Ophthalmoscopy in reverse.

18. Direct ophthalmoscopy.
19. Biomicroscopy .
20. Tonometry.
21. Goniopsia .
22. Diaphanoscopy.
23. Study of corneal sensitivity.
24. Exophthalmometry .
25. Electrophysiological research methods (ERG, EOG, study of the threshold of electrical sensitivity and lability of the optic nerve, visocontrastmetry , study of visual evoked potentials and study of brightness sensitivity).
26. Ophthalmodynamometry .
27. Fluorescein angiography.
28. Tonography .
29. Echobiometry . Echography .
30. Visual acuity test.
31. Visual field examination.
32. Study of light sensitivity.
33. Study of binocular vision.
34. Study of entoptic phenomena (mechanophosphene , autoophthalmoscopy , diascleral transillumination, cobolt test).
35. Static refraction of the eye, emmetropia and ametropia (hypermetropia, myopia, astigmatism), their clinical characteristics.
36. Refractogenesis, etiology and pathogenesis of myopia.
37. Clinical course of myopia, its progressive forms, malignant course.
38. The mechanism of accommodation and its purpose.
39. Methods of studying accommodation and convergence.
40. Age-related changes in accommodation (presbyopia).
41. General symptoms and clinical types of pathological process in corneal diseases.
42. Keratitis, exogenous and endogenous.
43. Etiology, pathogenesis, clinical features, diagnostics and treatment of creeping corneal ulcer. Emergency care.
44. Herpetic keratitis. Classification, pathogenesis, clinical features, diagnostics and treatment.
45. Tuberculous-allergic and hematogenous tuberculous keratitis, clinical picture, treatment.
46. Parenchymatous syphilitic keratitis. Pathogenesis, clinical features and treatment.
47. Neuroparalytic keratitis. Pathogenesis, clinical features and treatment.
48. Recurrent corneal erosion, rosacea keratitis , clinical picture, treatment.
49. Corneal dystrophies and degenerations. Primary and secondary degenerations. Epithelial-endothelial corneal dystrophy, clinical features, treatment methods. Keratomalacia .
50. Anomalies of the size and shape of the cornea. Keratoconus, clinical picture, diagnostics and treatment.
51. Outcomes of corneal diseases, principles of surgical treatment.
52. Cataracts congenital and acquired (simple, complicated, with associated changes). Pathogenesis, clinical picture, diagnostics.
53. Prevention of obscuration retinal underdevelopment.
54. Classification of cataracts in children and adults.
55. Modern cataract surgery. Intra-extracapsular extraction, laser and ultrasound methods of cataract treatment, surgical and postoperative complications.
56. Features of cataract removal in people of different ages.
57. Optical correction after cataract extraction (spectacle correction, IOL, contact correction).
58. Congenital anomalies of the shape and position of the lens (lenticonus , dislocation, etc.).
59. Congenital anomalies of the vitreous body, retrolental fibroplasia .
60. Acquired changes in the vitreous body: destruction, clouding, hemophthalmos , detachment, collapse.
61. Surgical methods of treatment of vitreous body diseases (vitreectomy , etc.).
62. Iritis, anterior uveitis (iridocyclitis). Clinic, diagnostics, differential diagnostics, treatment, emergency care.
63. Complications of iridocyclitis: sequential (complicated) cataract, secondary glaucoma, hypotonia of the eye, subatrophy and atrophy of the eyeball, vitreous abscess, endophthalmitis , retinal detachment, neuritis. Tactics of drug and surgical treatment.

64. Posterior uveitis (choroiditis), peripheral uveitis. Classification, clinical features, diagnostics, treatment, outcomes.
65. Acute purulent uveitis. Some clinical features and course of uveitis of various etiologies.
66. Features of the clinical course of uveitis in children.
67. Clinical and morphological classification of uveitis (anterior, middle, posterior, peripheral, panuveitis).
68. Dysfunction of the ciliary body. Fuchs syndrome. Clinic, diagnostics, differential diagnostics, complications, treatment.
69. Glaucomatocyclic crisis syndrome . Clinical presentation, diagnostics, differential diagnostics, treatment.
70. Coloboma of the iris and choroid . Aniridia , true and false polycoria , correctopia .
71. Modern problems of classification of tumors of the organ of vision, morbidity, mortality.
72. Benign epithelial tumors of the eyelids: hemangioma, papilloma, senile wart, epidermal cysts, sebaceous gland adenoma, basalioma.
73. Epithelial precancerous diseases of the eyelids: xeroderma pigmentosum, Bowen's epithelioma , senile keratosis, cutaneous horn.
74. Epithelial malignant tumors of the eyelids: skin cancer of the eyelids, meibomian gland cancer.
75. Pigmented benign tumors of the eyelids; nevi (progressive nevus.
76. Pathological conditions of accommodation (spasm, paralysis, accommodative asthenopathy), diagnostics, treatment methods.
77. A set of trial spectacle lenses, determination of refraction using lenses (subjective method).
78. Objective methods for determining refraction: skiascopy, refractometry, computer refractometry, ophthalmometry.
79. The procedure for examining a patient when prescribing glasses, general rules for prescribing glasses and writing out spectacle lenses.
80. Prescriptions for glasses, prescription of glasses for hypermetropia , myopia, astigmatism, anisometropia , presbyopia, aphakia.
81. Features of prescribing glasses to children, features of optical correction in the elderly.
82. Spheroprismatic glasses, indications, prescription rules, observation methods. Contact vision correction: main indications for its prescription, dispensary observation of patients using contact lenses.
83. Intraocular correction. Indications, principles of dispensary observation.
84. Antenatal prophylaxis, medical and genetic consultation. Postnatal prophylaxis: conditions for visual work, for the general development of the child, general regimen.
85. Principles of dispensary observation of patients with myopia.
86. Pseudomyopia . Etiology, pathogenesis, course, prognosis, prevention, methods of observation and medical examination, treatment.
87. Surgical methods for preventing progression
88. and optical correction of myopia (scleral strengthening and refractive surgeries).
89. The oculomotor system and its functions. Anatomical and physiological foundations of binocular vision.
90. Latent strabismus or heterophoria .
91. Etiology and pathogenesis of concomitant strabismus (loss or weakening of visual afferentation, difference in the size of images on the retinas of the eyes, accommodation -refractive factor, CNS damage).
92. Clinical and pathophysiological features of the visual and oculomotor systems in concomitant strabismus: binocular functions, sensory relationships, depth vision, eye movement, fusion ability, visual fixation.
93. Clinical classification of concomitant strabismus.
94. Methods of examination of a patient with concomitant strabismus.
95. General plan and sequence of treatment, optical correction of amtropia , treatment of amblyopia, orthoptic exercises, exercises for developing simultaneous vision and bifoveal fusion , diplopic exercises, stereoscopic exercises.
96. Surgical stage of treatment of concomitant strabismus: operations on the muscles of horizontal and vertical action, strengthening or weakening their action.
97. Postoperative treatment.
98. Prevention of concomitant strabismus, organization of work on prevention and treatment of concomitant strabismus.
99. Paralytic strabismus, ophthalmoplegia. Etiology, pathogenesis, clinical manifestations.
100. Methods of diagnostics of paralytic strabismus and ophthalmoplegia.
101. Treatment principles: etiological , surgical.

102. Nystagmus. Etiology, diagnostics, principles of treatment.
103. Anomalies in the development of the eyelids: microblepharon , ankyloblepharon , coloboma, blepharochalasis , eversion, inversion, epicanthus, congenital ptosis.
104. Eales disease . Clinic, stages, treatment.
105. Central serous chorioretinitis. Clinic, diagnostics, stages, treatment methods.
106. Juxtapapillary chorioretinitis of Jensen . Clinic, diagnostics, treatment. Proliferating retinitis. Pathogenesis, outcomes, treatment.
107. Diabetic retinopathy.
108. Sclerotic dystrophies of the macula (spot), early and late forms. Clinic, diagnostics, treatment.
109. Familial hereditary dystrophies (Stargart , Doina, Best spots, angioid stripes of the retina). Tapetoretinal dystrophies, pigment degeneration. Clinic, diagnostics, treatment methods.
110. Coats disease , clinical course, outcomes.
111. angiomatosis , clinical presentation, course, complications.
112. Diagnosis, treatment and prevention of retinal detachment.
113. Acute obstruction of the central retinal artery and its branches. Clinical presentation, diagnostics, emergency care, outcomes.
114. Acute obstruction of the central retinal vein and its branches. Clinic, diagnostics, complications, treatment, prognosis, indications for laser coagulation.
115. Optic neuritis. Clinic, diagnostics of four stages. Retrobulbar neuritis. Etiology, clinical picture, diagnostics, treatment.
116. Treatment of neuritis, prevention of optic nerve atrophy.
117. Optico-chiasmatic arachnoiditis. Etiology, forms of the disease, clinical picture, differential diagnosis. Treatment, prognosis.
118. Congestive optic disc. Classification, etiology, clinical features, diagnostic methods, differential diagnostics, treatment, prognosis, complications.
119. Optic nerve damage in methyl alcohol poisoning.
120. Damage to the optic nerve due to poisoning with lead, arsenic, and organophosphorus compounds.
121. Clinic, diagnostics, treatment of optic nerve damage due to alcohol and tobacco intoxication.
122. Primary and secondary atrophy of the optic nerve.
123. Etiology, clinical features, diagnostics, treatment of optic nerve atrophy.
124. Glaucoma. Classification of primary glaucoma, main types of glaucoma and ocular hypertension.
125. Etiology and pathogenesis of primary glaucoma (hereditary, hemodynamic and hydrodynamic factors). Relationship of primary glaucoma with other diseases and the external environment.
126. Glaucoma clinic. Cardinal clinical signs of glaucoma. Factors determining the level of intraocular pressure. Normal pressure limits, true and tonometric IOP. Optic nerve disc in glaucoma.
127. Pathogenesis and nature of visual impairment in glaucoma.
128. Open-angle glaucoma clinic.
129. Clinic of closed-angle glaucoma.
130. Clinic of acute attack of glaucoma.
131. Diagnosis of primary glaucoma.
132. The importance of complaints and anamnesis (heredity, general diseases, working conditions, occupational hazards).
133. Special examination methods: tonometry, compression-tonometric tests. Topography, gonioscopy , isoptoperimetry .
134. Early diagnostics of open-angle and closed-angle glaucoma. Diagnostics of glaucoma attack.
135. Differential diagnosis of an acute attack of glaucoma with inflammatory diseases (conjunctivitis, iridocyclitis, keratitis) and with swelling cataract.
136. Modern concepts of ocular hypertension.
137. Essential and symptomatic hypertension of the eye.
138. Ocular hypertension and early glaucoma.
139. Conservative treatment of primary glaucoma.
140. Methods and general principles of antihypertensive therapy: sympathicotropic drugs, beta-blockers, sympatholytics .
141. General antihypertensive agents: carbonic anhydrase inhibitors, osmotic agents, and others.

142. Treatment of acute attack of glaucoma.
143. Treatment aimed at normalizing metabolic processes in eye tissues.
144. Work and life regime of patients with primary glaucoma.
145. Surgical treatment of primary glaucoma.
146. Modern principles of surgical treatment of primary glaucoma. Pathogenetically directed microsurgery of the eye in glaucoma.
147. Surgical treatment of open-angle glaucoma.
148. Methods of surgical treatment of closed-angle glaucoma.
149. Surgical treatment of acute attack of glaucoma.
150. Preparing the patient for surgery, postoperative management.
151. Laser treatment of glaucoma.
152. Organization of the fight against blindness from glaucoma.
153. Epidemiology of glaucoma.
154. Active detection and early diagnosis of glaucoma.
155. Outpatient observation of patients with glaucoma.
156. Resolving issues of professional selection, labor and military expertise, temporary disability of patients with glaucoma.
157. Secondary glaucoma. Etiology, treatment, prevention methods.
158. Congenital glaucoma.
159. Cardinal signs of congenital glaucoma.
160. Early symptoms of congenital glaucoma.
161. The fundamental difference between congenital and primary glaucoma.
162. Causes of congenital glaucoma.
163. Congenital changes in the anterior chamber angle, vortex veins, suprachoroidal space, choroid in congenital glaucoma.
164. Stages of congenital glaucoma.
165. Clinical signs of early glaucoma.
166. Clinical signs of advanced glaucoma.
167. Signs of advanced glaucoma.
168. Signs of near-absolute and absolute glaucoma.
169. Treatment of congenital glaucoma.
170. Primary care for congenital glaucoma.
171. Surgical treatment of congenital glaucoma.
172. Postoperative treatment of children with congenital glaucoma.
173. Signs of compensated, uncompensated, decompensated glaucoma.
174. Signs of simple, complicated glaucoma, glaucoma with accompanying general and local changes. Signs of congenital juvenile glaucoma.
175. Classification, clinical presentation, diagnostics, treatment of orbital injuries.
176. Surgical tactics for fresh and delayed injuries of the walls and edges of the orbit. Use of auto-, homo- and alloplastic materials for restoring the structure of the orbit. Rational timing of intervention in orbital injuries.
177. Injuries to the eye appendages. Injuries to the eyelids, lacrimal ducts. Surgical treatment, plastic surgery.
178. Combination of orbital trauma with displacement and damage to the eyeball.
179. Non-penetrating eye injuries. Conjunctival injuries, microtraumas. First aid, treatment principles, prevention of industrial microtraumas .
180. Penetrating eye injuries. Classification (simple, complex, complicated). Diagnostics, emergency care.
181. Diagnosis of foreign bodies inside the eye.
182. Chalcosis , siderosis.
183. Complex and complicated penetrating wounds of the eye.
184. Traumatic cataract, purulent iridocyclitis, endophthalmitis , sympathetic inflammation. Treatment principles.
185. Blunt eye injuries. Clinic, diagnostics, classification. Treatment and outcomes.
186. Thermal burns. Classification, clinical features, diagnostics, emergency care, treatment.
187. Chemical burns. Classification, clinical features, diagnostics, treatment.

188. Treatment of the consequences of burns.
189. Damage to the organ of vision caused by conventional firearms.
190. Damage to the organ of vision caused by conventional firearms.
191. Combined lesions of the visual organ. First aid, medical care, sorting the wounded, determining the evacuation destination.
192. Classification of various eye injuries.
193. Clinic of various eye injuries.
194. First aid for various eye injuries.
195. Types of treatment and outcomes of various eye injuries in children.
196. Effects of electromagnetic spectrum radiation on the eye. Clinic of eye damage by microwave radiation, IF and CF rays, visible light of increased brightness, ionizing radiation (alpha and beta particles, soft and hard X-rays, neutrons), laser radiation.
197. Damage to the visual organ due to intoxication of the body with chemicals (heavy metals, organophosphorus compounds, aromatic hydrocarbons).
198. The effect of alcohol on the organ of vision.
199. Eye lesions in tuberculosis.
200. Eye lesions in toxoplasmosis.
201. Eye lesions in influenza.
202. Eye lesions in syphilis.
203. Eye lesions in brucellosis, tularemia, leprosy, childhood infections.
204. Cysticercosis of the eye. Localization in the tissues of the eye, diagnostics and clinical picture of intra- and extrabulbar Cysticercosis . Treatment, surgical techniques, outcomes.
205. Echinococcosis of the orbit. Pathogenesis, clinical picture, diagnostics, treatment, prognosis.
206. Changes in the retina and optic nerve in hypertension and atherosclerosis, their importance for assessing the severity of the general disease. Differential diagnosis, clinical picture, dynamics of the process.
207. Regional hypertension (symptomatic hypertension). Treatment of hypertensive neuroretinopathy .
208. Changes in the organ of vision in case of heart defects, chronic heart failure.
209. Changes in the retina and optic nerve in kidney diseases and toxicosis of pregnancy. Clinical course, prognosis.
210. Ophthalmologic symptoms in diseases of the blood and hematopoietic organs. Myeloid leukemia, lymphoid leukemia, pernicious anemia, hemorrhagic diathesis.
211. Ophthalmological symptoms in pathology of the pituitary gland and hypothalamic-pituitary system: pituitary tumors, Itsenko-Cushing's disease.
212. Diabetes mellitus. Pathogenesis of ophthalmological symptoms, types of visual organ damage (blepharitis, styes, iridocyclitis, cataract, glaucoma).
213. Diabetic retinopathy. Classification, clinical course, complications, prognosis, diagnostics.
214. Modern methods of treating diabetes (medication, laser and photocoagulation, surgical treatment).
215. Ophthalmological symptoms in diseases of the thyroid gland (diffuse toxic goiter, hypothyroidism) and parathyroid glands.
216. General ophthalmologic signs: visual disturbances, stagnation of the disc, primary and secondary optic atrophy, changes in the visual field, exophthalmos, pupillary reactions, disorders of the oculomotor muscles, nystagmus.
217. Ophthalmological symptoms in topical diagnostics of tumors of the supratentorial zone (frontal, temporal, parietal, occipital lobes, sellar and parasellar regions).
218. Ophthalmological symptoms in topical diagnostics of tumors of the cerebellum, fourth ventricle, and cerebellopontine angle.
219. Changes in the organ of vision in optochiasmal leptomeningitis .
220. Changes in the organ of vision in multiple sclerosis: pathogenesis, clinical picture, course, prognosis, treatment methods.
221. 118. Ophthalmological symptoms in Takayasu's disease , Grenland-Strandberg syndrome (angioid streaks of the retina).
222. Ophthalmological symptoms in Recklinghausen's neurofibromatosis : clinical presentation, diagnostics, surgical treatment, prognosis.

223. Pathological changes in the optic nerves as part of Foster-Kennedy syndrome, Vogt- Harada syndrome , and Behr disease.
224. Syndromes involving changes in the choroid (Behcet's disease, Bechterew- Strumpell -Marie disease , Still-Hauffard-Felty syndrome , Besnier -Beck- Schaumann disease). Clinic, treatment methods, prognosis.
225. Syndromes accompanied by increased intraocular pressure (Kraup -Posner- Schlossman , Maniere , Fuchs, Axenfeld , Sturge -Weber disease). Clinic. Differential diagnosis with primary glaucoma, treatment.
226. Eye clinics of district polyclinics and medical units, their treatment and preventive activities.

5. Protocol for coordinating the work program of the discipline "Ophthalmology" for the implementation of interdisciplinary links with the provision of discipline.

Department of Otolaryngology and Ophthalmology, course "Ophthalmology", 5th year, Faculty of Medicine.

Excerpt from the work program:
Requirements for students starting to study the discipline "ophthalmology":
Initial level of the student - when starting to study the discipline "ophthalmology", the student must have a basic level of knowledge in the following disciplines:
Anatomy
Normal physiology
Histology, embryology, cytology
Pathological anatomy, clinical pathological anatomy
Pathophysiology, clinical pathophysiology
Topographic anatomy and operative surgery

No.	Name of the discipline	The name of the department where the discipline is studied	Names of topics, sections, modules	Signature of the head of the department with whom the approval is being carried out
1	Anatomy	Anatomy and operative surgery	Section 1	
2	Normal physiology	Physiology and pathophysiology	Section 1	
3	Histology, embryology, cytology	Histology and biology	Section 1	
4	Pathological anatomy, clinical pathological anatomy	Physiology and pathophysiology	Section 1	
5	Pathophysiology, clinical pathophysiology	Physiology and pathophysiology	Section 1	
6	Topographic anatomy and operative surgery	Anatomy and operative surgery	Sections 1, 2, 3	

Familiarization sheet

Job title	Full name	Date	Signature
Professor	Shtilerman A.L.	April 25, 2025	
Professor	Vydrov A.S.	April 25, 2025	

APPROVED
at a department meeting
"Otorhinolaryngology and ophthalmology"
Protocol No. 9 of April 14, 2026
Head of Department

A.A. Blotsky

ADDITIONS AND CHANGES TO THE WORK PROGRAM IN THE DISCIPLINE "OPHTHALMOLOGY" SPECIALTY 31.05.01 MEDICAL CARE FOR THE 2026-2027 ACADEMIC YEAR

I. Make an addition and change to section 3.5 “Professional databases, information and reference systems, electronic educational resources.”

Professional databases, information reference systems, electronic educational resources

Name resource	Resource Description	Access	Resource address
ELECTRONIC LIBRARY SYSTEMS			
Student Consultant. Medical University Electronic Library	For students and faculty of medical and pharmaceutical universities. Provides access to electronic versions of textbooks, teaching aids, and periodicals.	Remote access after registration under the university profile	https://www.studentlibrary.ru/
Reference and information system " MedBaseGeotar ".	The MedBaseGeotar reference and information system is designed for practicing medical specialists, researchers, teachers, postgraduate students, residents, senior students, and healthcare managers to quickly search, select, and read the medical literature they need for their work in a single data source.	Remote access after registration under the university profile	h https://mbasegeotar.ru/pages/index.html
Electronic Library System " Bookup "	A large medical library is an information and educational platform for the shared use of electronic educational and methodological publications from medical universities in Russia and the CIS countries.	Remote access after registration under the university profile	https://www.books-up.ru/
Electronic Block System "Lan"	The Network Electronic Library of Medical Universities is an electronic database of educational and scientific works on medical topics, created for the purpose of implementing network	Remote access after registration under the	https://e.lanbook.com/

	forms of professional educational programs, open access to educational materials for partner universities.	university profile	
Scientific electronic library " CyberLeninka "	CyberLeninka is a scientific electronic library built on the Open Science paradigm. Its main goals are the popularization of science and scientific activity, public oversight of the quality of scientific publications, the development of interdisciplinary research, a modern institution of scientific review, increasing the citation rate of Russian science, and building a knowledge infrastructure. It contains over 2.3 million scientific articles.	free access	https://cyberleninka.ru/
Oxford Medicine Online	Oxford Press's collection of medical publications, bringing together over 350 titles into a single, cross- searchable resource . Publications include The Oxford Handbook of Clinical Medicine and The Oxford Textbook of Medicine , the electronic versions of which are constantly updated.	free access	http://www.oxfordmedicine.com
Human Biology Knowledge Base	Reference information on physiology , cell biology , genetics , biochemistry , immunology , and pathology . (Source: Institute of Molecular Genetics, Russian Academy of Sciences .)	free access	http://humbio.ru/
Online Medical Library	Free reference books, encyclopedias, books, monographs, essays, English-language literature, tests.	free access	https://www.medlib.ru/library/library/books
INFORMATION SYSTEMS			
Clinical Guidelines Index	A resource of the Russian Ministry of Health that contains clinical guidelines developed and approved by medical professional non-profit organizations of the Russian Federation, as well as methodological manuals, nomenclatures, and other reference materials.	Link to download the application	https://cr.minzdrav.gov.ru/#!/
Federal Electronic Medical Library (FEMB)	The Federal Electronic Medical Library is part of the unified state information system in the field of healthcare as a reference system **.** The FEMB was created on the basis of the funds of the Central Scientific Medical Library named after I.M. Sechenov.	free access	https://femb.ru/
Russian Medical Association	A professional online resource. Purpose: to promote effective professional activity among medical personnel. Contains the charter, personnel, structure, membership rules, and information about the Russian Medical Union.	free access	http://www.rmass.ru/

Web medicine	The website provides a directory of professional medical resources, including links to the most authoritative specialized websites, journals, societies, as well as useful documents and programs. It is intended for physicians, students, and staff of medical universities and research institutions.	free access	http: //webmed.irkutsk.ru/
DATABASES			
World Health Organization	The site contains news, statistics on countries that are members of the World Health Organization, fact sheets, reports, WHO publications, and much more.	free access	http://www.who.int/ru/
Ministry of Science and Higher Education of the Russian Federation	The website of the Ministry of Science and Higher Education of the Russian Federation contains news, newsletters, reports, publications, and much more.	free access	http://www.minobrnauki.gov.ru
Ministry of Education of the Russian Federation	The website of the Ministry of Education of the Russian Federation contains news, newsletters, reports, publications, and much more.	free access	https://edu.gov.ru/
Federal Portal "Russian Education"	A single point of access to educational resources. This portal provides access to textbooks on all areas of medicine and healthcare.	free access	http : // www . edu.ru/
Polpred.com	Electronic Library System Business Media. Media Review	free access	https://polpred.com/news
BIBLIOGRAPHICAL DATABASES			
Database "Russian Medicine"	Created at the Central Scientific and Methodological Library, it covers the entire collection since 1988. The database contains bibliographic descriptions of articles from Russian journals and collections, dissertations and their abstracts, as well as Russian and foreign books, institute proceedings, conference materials, etc. Thematically, the database covers all areas of medicine and related fields of biology, biophysics, biochemistry, psychology, etc.	free access	https://rucml.ru/
PubMed	A text database of medical and biological publications in English. PubMed is an electronic search engine with free access to 30 million publications from 4,800 indexed medical journals. The database contains articles published from 1960 to the present, including information from MEDLINE, PreMEDLINE , and NLM. Each year, the portal	free access	https :// pubmed . ncbi . nlm . nih . gov /

	is updated with more than 500,000 new papers.		
eLIBRARY.RU	A Russian information portal in science, technology, medicine, and education, containing abstracts and full texts of over 13 million scientific articles and publications. The eLIBRARY.RU platform offers electronic versions of over 2,000 Russian scientific and technical journals, including over 1,000 open-access journals.	Full functionality of the site is available after registration.	http://elibrary.ru/defaultx.asp
Electronic library of dissertations (RSL)	Currently, the Electronic Library of Dissertations of the Russian State Library contains more than 919,000 full texts of dissertations and abstracts.	free access	http://diss.rsl.ru/?menu=disscatalog/
Medline.ru	Medical and biological portal for specialists. Biomedical journal.	free access	https://journal.scbmt.ru/jour/index
Official Internet portal of legal information	The single official state information and legal resource in Russia	free access	http://pravo.gov.ru/

II. Make an addition and change to section 3.6 “ Licensed and freely distributed software used in the educational process .”

List of software (commercial software products).

No. p/p	List of software (commercial software products)	Details of confirming documents documents
1.	MS operating system Windows 7 Pro	License number 48381779
2.	MS operating system Windows 10 Pro	CONTRACT No. UT-368 from September 21, 2021
3 .	MS Office	License numbers: 43234783, 67810502, 67580703, 64399692, 62795141, 61350919
4.	Kaspersky Endpoint Security for Business - Standard Russian Edition . 50-99 Node 1 year Educational Renewal License	Agreement No. 7 AA dated 02/07/2025
5.	1C Accounting and 1C Salary	LICENSE AGREEMENT 612/L dated 02.02.2022 (additional licenses)
6.	1C: PROF University	LICENSE AGREEMENT No. KrTsB-004537 dated December 19, 2023
7.	1C: PROF Library	LICENSE AGREEMENT No. 2281 dated November 11, 2020
8.	Consultant Plus	Contract No. 41AA dated December 27, 2024
9.	Kontur.Tolk	Agreement No. K213753/24 dated August 13, 2024
10.	3KL e-learning environment (Russian Moodle)	Agreement No. 1362.5 dated November 20, 2024
11.	Astra Linux Common Edition	Agreement No. 142 A dated September 21, 2021

12.	Information system "Plans"	Agreement No. 2873-24 dated June 28, 2024
13.	1C: Document Management	Agreement No. 2191 dated 10/15/2020
14.	R7-Office	Agreement No. 2 KS dated 12/18/2020
15.	License for "ROSA CHROME OS Work-station"	Agreement No. 88A dated 08/22/2024
16.	Alt Virtualization Server 10 (for secondary and higher vocational education)	Agreement No. 14AK dated September 27, 2024
17.	Dr.Web Desktop Security Suite Comprehen-sive Protection + Control Center for 12 months	Agreement No. 8 dated October 21, 2024
18.	Software "Schedule for educational institu-tions"	Agreement No. 82A dated July 30, 2024

List of freely distributed software

No. p/p	**The list is free distributed software**	**Links to license agreement**
1.	Yandex Browser	Freely distributed License Agreement for the Use of Yandex Browser Soft-ware https://yandex.ru/legal/browser_agreement/
2.	Yandex.Telemost	Freely distributed License agreement for the use of programs https://yan-dex.ru/legal/telemost_mobile_agreement/
3.	Dr.Web CureIt !	Freely distributed License Agreement: https://st.drweb.com/static/new-www/files/li-cense_CureIt_ru.pdf
4.	OpenOffice	Freely distributed License: http://www.gnu.org/copyleft/lesser.html
5.	LibreOffice	Freely distributed License: https://ru.libreoffice.org/about-us/license/
6.	VK Calls	Freely distributed https://vk.com/licence
7.	Kaspersky Free Antivirus	Freely distributed https://products.s.kaspersky-labs.com/homeuser/Kaspersky4Win2021/21.16.6.467/en glish-0.207.0/3830343439337c44454c7c4e554c4c/kis_eula_e n-in.txt

III. Make an addition and change to section 3.7 “ Resources of the information and telecommunications network “Internet” .

- Amur State Medical Academy Library. Access mode: **https://amurgma.ru/obuchenie/biblioteki/biblioteka-amurskoy-gma/**
- Electronic Library System "Student Consultant." Access Mode: **https://www.studentlibrary.ru**