

MINISTRY OF HEALTHCARE OF THE RUSSIAN FEDERATION  
State Government-Funded Educational Institution of Higher Professional Education  
«NORTHERN STATE MEDICAL UNIVERSITY»  
of Ministry of Healthcare of the Russian Federation

**METHODOLOGICAL GUIDELINES FOR STUDENTS**  
Ophthalmology

---

Specialty 31.05.01 «General medicine».

2024

## Module 1

### "Anatomy and physiology of the visual organ. Visual functions and methods of their study"

1. Purpose of the activity: the practical study of anatomy students of buildorbit of the eye and its appendages, the visual pathways, the central visual analyzer and physiology of the visual act, as well as visual function learning skill test.

Objectives: To teach students:

1. determine the distance vision and near,
2. investigate color perception of polychromatic tables Rabkin and threshold tables Yustova.
3. To determine the field of view of the control method and the Forster perimeter, color of white and colored objects.
4. Pursue campimetry to identify cattle and blind spots.
5. Determine approximately binocular vision with the help of color tests.
6. The method of identification and evaluation of the photosensitivity on adaptometry.

2. The basic concepts that should

- visual organ,
- sharpness of vision,
- color perception,
- field of view,
- perimetry, campimetry,
- binocular vision.

3. Questions to the occupation.

1. The concept of embryogenesis and the general structure of the organ of vision,
2. The structure of the orbit, and orbital wall opening and the contents of the orbit.
3. The structure, functions and clinical significance of the motor apparatus eyes protective device (eyelids and conjunctiva), lacrimal apparatus, lacrimal pathways.
4. The structure of the eyeball, its three shells vascular tract, eyes nucleus, given the clinical and functional assessment of each shell.
5. The body of blood supply, venous and lymphatic drainage.
6. The structure and function of the retina, its layers, receptors, neurons, the macula, the normal pattern of the fundus,
7. The anatomy of the optic nerve, the central parts of the visual analyzer.
8. The control method for determining the field of view, campimetry.
9. Study color vision and light perception.

4. Questions for self-control anatomy and physiology of the organs of vision. option 1

1. What are the bones that make up the wall of the orbit.
2. What borders the upper wall of the orbit.
3. What nerve supplies the external muscles of the eye.
4. Name the blood vessels and nerves that pass through the upper orbital fissure.
5. Name the deepening orbit, unrelated to the lacrimal organs.
6. What are the parts of the eye is a vascular tract.
7. List the branches of the ophthalmic artery feeding the eyeball.
8. What are the main parts of the visual analyzer.

Option 2

1. List of bone forming an upper wall of the orbit.
2. What are the main holes and crevices orbit and where they open.
3. The outer innervated, rectus eye, superior oblique.

4. Name the shell of the eyeball.
5. What are the functions of the ciliary body.
6. List the departments of the lacrimal apparatus.
7. What are the internal, transparent environment and eye tissue.
8. What are the terminal branches of the ophthalmic artery is not involved in the nutrition of the eyeball.

Visual functions and methods of their investigation;

Option 1

1. What area of the retina in charge of central vision. What neuroepithelial cells due to this feature.
2. What is the visual acuity.
3. Calculate the formula Snellen visual acuity, if a patient with a two meter reads the third row of the table Sivtseva.
4. How to express the presence of the patient the wrong projection light.
5. List the main ways to identify the simulation reduction of visual acuity.
6. What are some ways you can identify disorders of color perception.

Option 2

1. What are the functions of the peripheral retina.
2. The minimum angle of view, characterizing normal sharpness of visual function.
3. Write a formula for the calculation of Snellen visual acuity with the designation symbols.
4. How to express in a patient having the right light perception.
5. How can you identify one blindness simulation.

5. Training and methodological support:

5.1. Main references:

1. Мармыш В.Г. Ophthalmology = Офтальмология [Электронный ресурс] : пособие/ В. Г. Мармыш, С. Н. Ильина, В. В. Романчук. -Гродно: ГрГМУ, 2021. -400 с.- URL: <https://www.books-up.ru/ru/book/ophthalmology-13930919>

8.2. Supplementary literature

1. Bhartiya S. The Glaucoma Screening Manual [Электронный ресурс]/ S. Bhartiya. -New Delhi, India: Jaypeedigital, 2022. -72 с.- URL: <https://www.jaypeedigital.com/book/9789354652219>
2. Rajan M. Color Atlas of Retina & Optic Nerve [Электронный ресурс]/ M. Rajan, N. R. Thomas. -New Delhi, India: Jaypeedigital, 2022. -370 с.- URL: <https://www.jaypeedigital.com/book/9789354651137>
3. Shukla Y. Clinical Pediatric Ophthalmology and Strabismus [Электронный ресурс]/ Y. Shukla, R. Saxena. -New Delhi, India: Jaypeedigital, 2023. -424 с.- URL: <https://www.jaypeedigital.com/book/9789354653537>

**1. The list of questions and tasks for self-studies**

Sections and topics for the self-studying	Types and contents of the self-studies
1.Survey visual fields	<ol style="list-style-type: none"> <li>1. The development of practical skills - on the perimeter and campimetry colored objects.</li> <li>2. The decision of situational problems.</li> <li>3. Abstract messages, reports.</li> </ol>
2. Research color perception	<ol style="list-style-type: none"> <li>1. The decision of situational problems</li> <li>2. Abstract messages, reports</li> <li>3. information retrieval on the Internet.</li> </ol>

## Module 2

### "Methods of investigation objective eye appendage"

1. The purpose of classes to teach students methods of research objective eye appendages, the anterior segment of the eye, optical media and fundus. Create a general scheme and establish a procedure for fundus examination. To develop practical skills in the most common ophthalmic practice in manipulation.

**Objectives:** To teach students:

- to carry out an external examination of the body with a tour of the conjunctiva of the upper eyelid;
- conduct research by lateral lighting and transmitted light;
- the method of indirect ophthalmoscopy, fundus examination with a wide pupil;
- biomicroscopy method;
- assess the severity of the patient's ophthalmic pathology in collecting history

2. Basic concepts that must be learned by students in the study of topics:

- An external examination of the eye and its appendages,
- Research in the side (focal) lighting
- Research in transmitted light,
- Ophthalmoscopy inverted,
- Ophthalmoscopy in direct form,
- Biomicroscopy eyes: forward the focusing light; in the reflected light; in indirect focus light; in reverse diaphanosopic light.
- Gonioscopy, the study of intraocular pressure, research and so the tactile corneal sensitivity, the study eye hemodynamics, and transillumination fluorescence angiography, exophthalmometry, exophthalmometer and others.

3. Questions to the occupation.

1. Visual inspection method,
2. The method of investigation in the side (focal) lighting
3. The method of research in transmitted light,
4. The method ophthalmoscopy inverted,
5. The method as in direct ophthalmoscopy,
6. The method of eye biomicroscopy: live focus light; in the reflected light; in the indirect focus light; in reverse diaphanosopic light.
7. The method of examination of the anterior chamber angle - gonioscopy; research of intraocular pressure; Study tactile sensitivity of the cornea, the eye study of hemodynamics, and transillumination diaphanoscopy, fluorescent angiography, exophthalmometry, exophthalmometer and others.

4. Questions for self-control:

Option 1

1. What are the conditions necessary for the study eye by side lighting.
2. When lateral illumination can identify changes in the: a) \_\_\_\_ b) \_\_\_\_ c) \_\_\_\_ d) \_\_\_\_
3. The external examination can determine .....
4. For the study, the eyes of any media used method of research in transmitted light?
5. In the investigation of transmitted light a lamp ..... from the patient, ..... doctor sits down and directs the light to ..... help in study eye.
6. What is the difference clouding in the lens of the haze in the glass a visible body?

Option 2

1. For ophthalmoscopy inverted must have the following .....
2. What can be seen in the study of normal fundus?

3. In the study in transmitted light must have .....
4. opacities in the vitreous characterized .....
5. ophthalmoscope is carried out in the following sequence: first, inspect a) ..... then b) ..... willows) .. ..
6. Biomicroscopy is -..... Research ..... with is a combination of using ..... and .....

#### 5. Training and methodological support:

##### 5.1. Main references:

1. Мармыш В.Г. Ophthalmology = Офтальмология [Электронный ресурс] : пособие/ В. Г. Мармыш, С. Н. Ильина, В. В. Романчук. -Гродно: ГрГМУ, 2021. -400 с.- URL: <https://www.books-up.ru/ru/book/ophthalmology-13930919>

##### 8.2. Supplementary literature

1. Bhartiya S. The Glaucoma Screening Manual [Электронный ресурс]/ S. Bhartiya. -New Delhi, India: Jaypeedigital, 2022. -72 с.- URL: <https://www.jaypeedigital.com/book/9789354652219>
2. Rajan M. Color Atlas of Retina & Optic Nerve [Электронный ресурс]/ M. Rajan, N. R. Thomas. -New Delhi, India: Jaypeedigital, 2022. -370 с.- URL: <https://www.jaypeedigital.com/book/9789354651137>
3. Shukla Y. Clinical Pediatric Ophthalmology and Strabismus [Электронный ресурс]/ Y. Shukla, R. Saxena. -New Delhi, India: Jaypeedigital, 2023. -424 с.- URL: <https://www.jaypeedigital.com/book/9789354653537>

#### 6. The list of questions and tasks for self-studies

<i>Sections and topics for the self-studying</i>	<i>Types and contents of the self-studies</i>
1. Basic research methods	1.External inspection, investigation lateral illumination, transmitted light, direct and inverse ophthalmoscopy, biomicroscopy. 2. The decision of situational problems 3 Abstract messages, reports
2 Additional research methods	1.Analysis intraocular pressure, Gonioscopy, transillumination, exophthalmometer and others. 2. The decision of situational problems 3.Abstract messages reports 4. Search interns ones.

### Module 3

#### "Clinical refraction of the eye. Accommodation"

1. The purpose of lessons: learn to identify the type, degree of clinical refraction way to correct refractive errors and bittersns-scribed glasses, use a set of optical glasses. Know about its pathogenesisand complications of progressive myopia, as the disabling diseases about the basics of modern conservative and surgical treatment, the principles of prevention.

#### Tasks to teach students:

1. to understand what physical and clinical refraction, clinical types of refractive astigmatism;
2. understand what the accommodation of the eye, changes and violations of accommodative ability of the eye;
3. To determine the supply of accommodation;
4. determine the clinical eye refraction disorders;
5. prescribe glasses;

6. know the complications of diseases in violation of refraction;
7. aware of conservative and surgical treatment of refractive error, the methods of their correction.

2. Basic concepts that must be learned by students in the study of topics:

1. Physical refraction,
2. Clinical refraction,
3. The accommodation,
4. skiascopy, Oftalmometres, refractometers.
5. IOL refractive keratoplasty: keratofakia, keratomileusis, keratotomy.

3. Questions to the occupation.

1. Physical refraction (schematic and reduced eye).
2. clinical refraction (emmetropia, myopia, hyperopia).
3. Astigmatism, the types of astigmatism.
4. Methods for determination of refraction (subjective and objective).
5. Accommodation (mechanism, absolute and relative)
6. Presbyopia (principles of correct presbyopia).
7. Myopia (clinic, treatment guidelines).
8. Hyperopia. The principles of treatment of amblyopia.
9. Methods and means of correction (conservative and surgical), myopia, hyperopia, astigmatism.

4. Questions for self-control:

Control questions:

Option 1. Physical refraction is .....

2. What types of clinical refraction a) ..... b) ..... c) .....
3. What is the point further clear vision.
4. What are the methods for determining clinical eye refraction.
5. refers to the accommodation unit?
6. What is necessary to assign an additional correction of refractive error when presbyopia: 40 years ...; 50 years ... ; 60 years .....
7. Define astigmatism.
8. What corrective lenses, you know: a) ..... b) ..... c) ..... g) .....
9. Hyperopia may experience the following symptoms: a) ... .6) ... .in) ..... d) .....
10. The clinical course myopia is divided into a) ..... b) .....
11. What are the complications of high myopia in the fundus?
12. As the refractive power of the optical system ..... and clinical-refraction .....

Option 2.

1. Physical refraction is equal to the average .... and due to the primarily a) ..... diopters b) ..... diopters
2. Define clinical eye refraction.
3. Where is the farthest point of clear vision at different types clinical refraction.
4. What are some ways you can determine the strength of the unknown eyeglasses.
5. Accommodation of it .....
6. The mechanism of accommodation is as follows a) ..... b) ... .c) .....
7. Define presbyopia.
8. What is the anisometropia.
9. Name three types of correct astigmatism.
10. According to the degree of myopia is divided into a) ... b) ... c) .....
11. What are the etiological moments of myopia.

12. In the treatment of high progressive myopia following shall applying types of surgical procedures: a) ..... b) .....

#### 5. Training and methodological support:

##### 5.1. Main references:

1. Мармыш В.Г. Ophthalmology = Офтальмология [Электронный ресурс] : пособие/ В. Г. Мармыш, С. Н. Ильина, В. В. Романчук. -Гродно: ГрГМУ, 2021. -400 с.- URL: <https://www.books-up.ru/ru/book/ophthalmology-13930919>

##### 8.2. Supplementary literature

1. Bhartiya S. The Glaucoma Screening Manual [Электронный ресурс]/ S. Bhartiya. -New Delhi, India: Jaypeedigital, 2022. -72 с.- URL: <https://www.jaypeedigital.com/book/9789354652219>

2. Rajan M. Color Atlas of Retina & Optic Nerve [Электронный ресурс]/ M. Rajan, N. R. Thomas. -New Delhi, India: Jaypeedigital, 2022. -370 с.- URL: <https://www.jaypeedigital.com/book/9789354651137>

3. Shukla Y. Clinical Pediatric Ophthalmology and Strabismus [Электронный ресурс]/ Y. Shukla, R. Saxena. -New Delhi, India: Jaypeedigital, 2023. -424 с.- URL: <https://www.jaypeedigital.com/book/9789354653537>

#### 6. The list of questions and tasks for self-studies

<i>Sections and topics for the self-studying</i>	<i>Types and contents of the self-studies</i>
1. Basic research methods	1. External inspection, investigation lateral illumination, transmitted light, direct and inverse ophthalmoscopy, biomicroscopy. 2. The decision of situational problems 3 Abstract messages, reports
2 Additional research methods	1.Research intraocular pressure, gonioscopy, transillumination, exophthalmometer and others. 2. The decision of situational problems 3.Abstract messages reports 4. Search interns ones.

#### Module №4

##### "Diseases of the protective apparatus of the eye"

1. Purpose of the activity: to introduce students to the organization, operation, have before the eye clinic office, to inculcate the skills of self-admission of outpatients, to teach students to diagnose and treat the most common diseases of the external eye, prevention, study the clinical features, treatment, etiology, complications, and modern methods of treatment and prevention of trachoma.

Tasks to teach students:

1. own inspection procedure conjunctival cavity, external examination of the eye and its appendages;
2. conduct a tubular sample kollagenom;
3. assess the nasolacrimal sample;

2. Basic concepts that must be learned by students in the study of topics:

- Blepharitis, chalazion, sty, abscesses and cellulitis eyelids, eversion and inversion of eyelids, ptosis, lagophthalmos,
- Bacterial and viral conjunctivitis, trachoma.
- Neonatal dacryocystitis, chronic dacryocystitis, lacrimal sac abscess.

3. Questions to the occupation.

1. Clinic and treatment of diseases of the eyelids, conjunctiva, lacrimal organs: blepharitis, chalazion, sty, abscesses and cellulitis eyelids, eversion and inversion of eyelids, ptosis, lagophthalmos,
2. Clinic and treatment of bacterial and viral conjunctivitis, trachoma.
3. Clinic and treatment of neonatal dacryocystitis, chronic dacryocystitis, cellulitis of the lacrimal sac.

2. Questions for self-control:

CONTROL QUESTIONS:

Option 1

1. Blepharitis - it .....
2. What are the causes of blepharitis.
3. Specify the principles of treatment of sty.
4. Basic principles of treatment of ptosis.
5. Lagophthalmus it .....
6. What are the main symptoms of inflammation of the conjunctiva.
7. The principles of treatment of acute purulent conjunctivitis.
8. Stage gonoblenoreal conjunctivitis.
9. What types of adenoviral conjunctivitis.
10. What research methods are used in violation of lacrimation passage?
11. Symptoms of neonatal dacryocystitis.
12. What are the causes of violations of lachrymal passage.
13. What types of pannus observed in trachoma.
14. Complications of trachoma.

Option 2

1. What types of blepharitis.
2. The main clinical manifestations of blepharitis.
3. Chalazion is .....
4. What are the main causes of lagophthalmus.
5. Specify the principles of treatment of malignant tumors of the eyelids.
6. Describe the main symptoms of acute purulent conjunctivitis.
7. What kinds of filmy conjunctivitis.
8. What are the clinical forms adenofaringoconjunctival fever.
9. What are the diseases of lacrimal you know.
10. What are the principles of treatment of cellulitis of the lacrimal sac.
11. What changes are observed in the conjunctiva of trachoma: 1,2,3,4 stage.
12. What are the consequences of trachoma.

5. Training and methodological support:

5.1. Main references:

1. Мармыш В.Г. Ophthalmology = Офтальмология [Электронный ресурс] : пособие/ В. Г. Мармыш, С. Н. Ильина, В. В. Романчук. -Гродно: ГрГМУ, 2021. -400 с.- URL: <https://www.books-up.ru/ru/book/ophthalmology-13930919>



## 8.2. Supplementary literature

1. Bhartiya S. The Glaucoma Screening Manual [Электронный ресурс]/ S. Bhartiya. -New Delhi, India: Jaypeedigital, 2022. -72 с.- URL: <https://www.jaypeedigital.com/book/9789354652219>
2. Rajan M. Color Atlas of Retina & Optic Nerve [Электронный ресурс]/ M. Rajan, N. R. Thomas. -New Delhi, India: Jaypeedigital, 2022. -370 с.- URL: <https://www.jaypeedigital.com/book/9789354651137>
3. Shukla Y. Clinical Pediatric Ophthalmology and Strabismus [Электронный ресурс]/ Y. Shukla, R. Saxena. -New Delhi, India: Jaypeedigital, 2023. -424 с.- URL: <https://www.jaypeedigital.com/book/9789354653537>

### 6. The list of questions and tasks for self-studies

<i>Sections and topics for the self-studying</i>	<i>Types and contents of the self-studies</i>
1.Mastering main methods of inspection	1. Development of inspection conjunctival cavity eversion of the upper eyelid, instill drops, laying of ointments. 2. The decision of situational problems 3 Abstract messages, reports
2 The development of additional methods	1.Sowing conjunctiva, lacrimal fluid intake. 2. The decision of situational problems 3.Abstract messages reports 4.Search interns ones.

## Module №5

### "Diseases of the cornea and sclera."

1. Objective: To teach students methods of investigation of the cornea; keratitis diagnosis with detection of the etiology of the disease. Learn to distinguish surface keratitis from deep, outcomes keratitis from inflammatory diseases in the cornea, to familiarize with the clinic, the course and the basic principles, of modern treatment of the most common forms of keratitis (purulent corneal ulcer, viral keratitis, tuberculosis, allergies, parenchymal keratitis changes in the cornea and common vitamin deficiency disease). Pay attention to the outcomes of students keratitis as special case blindness and reducing disability.

#### Objectives:

- to teach students:
- Master the methods of investigation in patients with lesions of the cornea,
- Distinguish the superficial form of the disease of the cornea from the deep,
- Distinguish the outcomes of corneal lesions from acute lesions cornea.

#### 2. Basic concepts that must be learned by students in the study of topics:

- Keratitis and ulcerative process
- Cloud, spot, walleye.
- Keratoplasty and keratoprosthesis.

#### 3. Questions to the occupation.

1. The classification of keratitis,
2. The specifications allow erosion of the cornea, and keratitis,
3. to differentiate between keratitis and corneal ulcer, list the steps of form of corneal ulcers,
4. Clinic and treatment of bacterial and viral keratitis,
5. The classification of herpetic keratitis and its treatment,
6. corneal dystrophy (hereditary and acquired)

7. Hypovitaminous keratitis,
8. keratitis of unknown etiology (filamentous, rosacea keratitis, and others.)
9. corneal opacity: cloud, spot, walleye.
10. The surgical methods of treatment operation and keratoplasty, keratoprosthesis.

4. Questions for self-control:

#### CONTROL QUESTIONS

Option 1

1. Name the layers of the cornea.
2. How is the power of the cornea.
3. What are the symptoms of keratitis subjective.
4. What kinds of inflammatory injection of the eyeball.
5. How can I determine the surface defect of the cornea.
6. Reasons for purulent corneal ulcer.
7. What complications can cause purulent corneal ulcer.
8. Name clinical form of tuberculosis keratitis.
9. Name the superficial forms of herpetic after primary keratitis.
10. What are the outcomes of corneal disease.
11. What is keratoprosthesis.

Option 2

1. What are the properties of the cornea.
2. The methods required for corneal examination.
3. The objective symptoms of keratitis.
4. What parts of the globe are involved in the process at an ulcer of the cornea?
5. What are the principles of treatment of purulent corneal ulcer.
6. Stage parenchymal keratitis.
7. Name after primary deep forms of herpetic keratitis.
8. For what purpose performed a corneal transplant.

5. Training and methodological support:

5.1. Main references:

1. Мармыш В.Г. Ophthalmology = Офтальмология [Электронный ресурс] : пособие/ В. Г. Мармыш, С. Н. Ильина, В. В. Романчук. -Гродно: ГрГМУ, 2021. -400 с.- URL: <https://www.books-up.ru/ru/book/ophthalmology-13930919>

8.2. Supplementary literature

1. Bhartiya S. The Glaucoma Screening Manual [Электронный ресурс]/ S. Bhartiya. -New Delhi, India: Jaypeedigital, 2022. -72 с.- URL: <https://www.jaypeedigital.com/book/9789354652219>
2. Rajan M. Color Atlas of Retina & Optic Nerve [Электронный ресурс]/ M. Rajan, N. R. Thomas. -New Delhi, India: Jaypeedigital, 2022. -370 с.- URL: <https://www.jaypeedigital.com/book/9789354651137>
3. Shukla Y. Clinical Pediatric Ophthalmology and Strabismus [Электронный ресурс]/ Y. Shukla, R. Saxena. -New Delhi, India: Jaypeedigital, 2023. -424 с.- URL: <https://www.jaypeedigital.com/book/9789354653537>

#### 6. The list of questions and tasks for self-studies

<i>Sections and topics for the self-studying</i>	<i>Types and contents of the self-studies</i>
1.Mastering main methods of inspection	1. Development of inspection conjunctival cavity eversion of the upper eyelid, instill drops, laying of ointments.

	2. The decision of situational problems 3 Abstract messages, reports
2 The development of additional methods	1.Sowing conjunctiva, lacrimal fluid intake. 2. The decision of situational problems 3.Abstract messages reports 4.Search interns ones.

## Module №6

### "Pathology of the choroid, retina and optic nerve.

1. Purpose of the activity: diagnostics iridocyclitis, choroiditis, uveitis, know about the etiology of inflammatory diseases of the vascular tract, communication with focal infection and common diseases of the body.

Objectives: To teach students

- Methods of investigation of patients with pathology of the vascular tract eye, the retina and the optic nerve,
- To form concept of modern methods of diagnosis and treatment of malignant tumors of vascular tract.
- Knowledge of the clinical picture of acute iridocyclitis and differential diagnosis with an acute attack of glaucoma, and the ability to provide medical care in acute iridocyclitis.
- Knowledge of the differential diagnosis of congestive optic nerve with optic neuritis, and the ability to provide urgent ophthalmological assistance with optic neuritis.
- Knowledge of the clinical picture of acute vascular diseases of the retina and the ability to provide urgent eye care.

2. Basic concepts that must be learned by students in the study of topics:

- Iridocyclitis and choroiditis,
- Chorioretinitis, macular degeneration, vascular disorders, detachment retina.
- Neuritis and congestive optic disc.

3. Questions to the occupation.

1. Clinic and treatment of diseases of the vascular tract: iridocyclitis and choroiditis (bacterial and viral origin)
2. clinics and treatment of diseases of the retina: chorioretinitis, macular degeneration, vascular disorders. Emergency care in case of arterial obstruction, thrombosis,
3. Clinic and treatment of youth and age-related macular degeneration,
4. clinics and treatment of retinal detachment,
5. diseases of the optic nerve: the differential diagnosis of congestive neuritis and optic disc.

4. Questions for self-control:

#### CHECKLIST TOPIC PATHOLOGY choroid

##### Option 1

1. Name the vessels involved in the blood supply of the entire vascular tract of the eye.
2. If there is iridocyclitis ..... and injection of the eyeball.
3. What are the functions of the department of vascular tract of the eye.
4. Complications iridocyclitis.
5. What are the complaints of placing patients with central chorioretinitis.
6. Means of Expanding the pupil.

##### Option 2

1. Name the parts of the vascular tract of the eye.

2. What objective signs of iridocyclitis.
3. Methods of diagnosing tumors inside the eye.
4. Methods for introducing mydriatics.
5. Principles of treatment of iridocyclitis.
6. What is the etiology of uveitis.

#### CHECKLIST on diseases of retina and the optic nerve

##### Option 1

1. What are the main changes are observed in the fundus with the diseases retina.
2. What are the main objective and subjective symptoms of acute obstruction
3. For the treatment of thrombosis CRV is a major ..... therapy, and for the pro-prevention severe complications such as an appointment is necessary .....
4. The most characteristic symptoms of retinitis pigmentosa.
5. The main etiological moments stagnant nipple.
6. What are the symptoms of optic neuritis.
7. The main causes optic nerve atrophy are.....

##### Option 2

1. Complaints of patients with diseases of the retina.
2. The main symptoms of thrombosis CRV.
3. For the treatment of acute obstruction of the CAC is used in the foundations of Mr. .... therapy. What are some specific drugs.
4. Treatment of retinitis pigmentosa.
5. What are the symptoms expressed stagnant nipple.
6. The main causes of optic neuritis.
7. Objective and subjective symptoms of optic neuritis.
8. The objective symptoms of optic nerve atrophy.

#### 5. Training and methodological support:

##### 5.1. Main references:

1. Мармыш В.Г. Ophthalmology = Офтальмология [Электронный ресурс] : пособие/ В. Г. Мармыш, С. Н. Ильина, В. В. Романчук. -Гродно: ГрГМУ, 2021. -400 с.- URL: <https://www.books-up.ru/ru/book/ophthalmology-13930919>

##### 8.2. Supplementary literature

1. Bhartiya S. The Glaucoma Screening Manual [Электронный ресурс]/ S. Bhartiya. -New Delhi, India: Jaypeedigital, 2022. -72 с.- URL: <https://www.jaypeedigital.com/book/9789354652219>
2. Rajan M. Color Atlas of Retina & Optic Nerve [Электронный ресурс]/ M. Rajan, N. R. Thomas. -New Delhi, India: Jaypeedigital, 2022. -370 с.- URL: <https://www.jaypeedigital.com/book/9789354651137>
3. Shukla Y. Clinical Pediatric Ophthalmology and Strabismus [Электронный ресурс]/ Y. Shukla, R. Saxena. -New Delhi, India: Jaypeedigital, 2023. -424 с.- URL: <https://www.jaypeedigital.com/book/9789354653537>

#### 6. The list of questions and tasks for self-studies

<i>Sections and topics for the self-studying</i>	<i>Types and contents of the self-studies</i>
1. Mastered main methods of inspection	<ol style="list-style-type: none"> <li>1. Development of inspection conjunctival cavity eversion of the upper eyelid, instill drops, laying of ointments.</li> <li>2. The decision of situational problems</li> <li>3. Abstract messages, reports</li> </ol>

2 The development of additional methods	1. Sowing conjunctiva, lacrimal fluid intake. 2. The decision of situational problems 3. Abstract messages reports 4. Search interns ones.
---	---

## Module №7

### "The pathology of the lens. Glaucoma"

1. Purpose of the activity: study the etiology of cataracts, modern methods of treatment and correction of aphakia, indications, methods of surgical treatment, meet with the operating device, tools for microsurgical operations. To study modern methods of early detection and prevention of primary glaucoma, methods of conservative and surgical treatment.

Objectives: To teach students:

1. The study of patients with pathology of the lens - by side lighting, transmitted light, and biomicroscopy eyeball.
2. Modern methods of diagnosis of cataracts, tactics and methods of concentration conservatively and surgical treatment of these diseases.
3. The clinical diagnosis of an acute attack of glaucoma to provide emergency assistance;
4. palpation method of determining the increase in intraocular pressure and evaluation;
5. instilled eye drops, lowering intraocular pressure;
6. The knowledge and skills to apply the methods of "distraction therapy" with an acute attack of glaucoma;
2. The basic concepts that need to be learned by students in the study of processes topics:
  - Cataracts
  - Aphakia,
  - Pseudophakia,
  - Glaucoma,
  - An acute attack of glaucoma.
3. Questions to the occupation.
  1. The classification of cataracts,
  2. The classification of congenital and acquired cataracts: conservative and surgical treatments
  3. Modern methods of treatment of patients with pathology of the lens
  4. The classification of glaucoma,
  5. The primary glaucoma, classification stages, clinic and treatment,
  6. Classification of secondary glaucoma, and treatment clinic,
  7. acute attack of glaucoma, clinic and treatment.

4. Questions for self-control:

#### CHECKLIST TOPIC PATHOLOGY LENS

##### Option 1

1. What are the types of congenital cataracts.
2. Specify the age of children with congenital cataracts, to which the operation is necessary.
3. Methods of diagnosis of senile cataracts.
4. Methods of conservative treatment of senile cataracts.
5. What are the symptoms of aphakia.

##### Option 2

1. What are the operations used in congenital cataract.
2. What are the stages of senile cataracts.
3. Methods of surgical treatment of senile cataracts.
4. Methods of correction of unilateral aphakia.

## CHECKLIST TOPIC Glaucoma

### Option 1

1. The outflow of intraocular fluid in the eye of a man going through.
2. Specify the upper limit of normal intraocular pressure.
3. What are the main clinical signs of congenital glaucoma.
4. Objective signs of an acute attack of closed-angle glaucoma are .....
5. What are the symptoms of advanced stage primary glaucoma.
6. What are the main forms of secondary glaucoma.
7. Cholinomimetic actions are .....
8. Name the osmotic action of drugs.
9. To improve the trophic metabolism prescribed glaucoma ....
10. In congenital glaucoma following operations .....

### Option 2

1. What are the indicators of hydrodynamics eye defined by a tonography.
2. Specify the three main types of glaucoma.
3. What is the most common cause of congenital glaucoma.
4. What are the signs and symptoms closed-angle glaucoma.
5. Specify the features characteristic of far-advanced stage of primary glaucoma.
6. What level of intraocular pressure is considered high for the eye.
7. Anticholinesterase action are .....
8. What kind of drugs are prescribed for the treatment of an acute attack of glaucoma.
9. What are the main types of anti-glaucomatous operations.

### 5. Training and methodological support:

#### 5.1. Main references:

1. Мармыш В.Г. Ophthalmology = Офтальмология [Электронный ресурс] : пособие/ В. Г. Мармыш, С. Н. Ильина, В. В. Романчук. -Гродно: ГрГМУ, 2021. -400 с.- URL: <https://www.books-up.ru/ru/book/ophthalmology-13930919>

#### 8.2. Supplementary literature

1. Bhartiya S. The Glaucoma Screening Manual [Электронный ресурс]/ S. Bhartiya. -New Delhi, India: Jaypeedigital, 2022. -72 с.- URL: <https://www.jaypeedigital.com/book/9789354652219>
2. Rajan M. Color Atlas of Retina & Optic Nerve [Электронный ресурс]/ M. Rajan, N. R. Thomas. -New Delhi, India: Jaypeedigital, 2022. -370 с.- URL: <https://www.jaypeedigital.com/book/9789354651137>
3. Shukla Y. Clinical Pediatric Ophthalmology and Strabismus [Электронный ресурс]/ Y. Shukla, R. Saxena. -New Delhi, India: Jaypeedigital, 2023. -424 с.- URL: <https://www.jaypeedigital.com/book/9789354653537>

### 6. The list of questions and tasks for self-studies

<i>Sections and topics for the self-studying</i>	<i>Types and contents of the self-studies</i>
1. Mastered main methods of inspection	1. Development of inspection conjunctival cavity eversion of the upper eyelid, instill drops, laying of ointments. 2. The decision of situational problems 3. Abstract messages, reports
2 The development of additional methods	1. Sowing conjunctiva, lacrimal fluid intake.

	2. The decision of situational problems 3. Abstract messages reports 4. Search interns ones.
--	--

## Module 9

### "The pathology of oculomotor apparatus. Changes in the body of common diseases. Occupational diseases of the eye "

#### Патология глазодвигательного аппарата. Изменения в организме при распространенных заболеваниях. Профессиональные заболевания глаз

1. The purpose of classes: practical study students binocular vision and methods of his research, the principles of conservative and surgical treatment of concomitant strabismus. Meet of changes in the eye of the common diseases of the body.

Objectives: To teach students:

- Determine binocular vision;
- To determine the angles of deflection means Hirschberg;
- The differential diagnosis of paralytic and commonwealth strabismus;
- Know what Orthoptics, pleoptika and at what stages of treatment obliquely through the eyes of children, these techniques are applied;
- the ability to assess the pattern of the fundus with hypertension, atherosclerosis, diseases of the blood, kidney, diabetes and other disorders, metabolism, as well as the need for examination of patients with diseases CNS.
- Know the clinic at the occupational injury.

2. The basic concepts that need to be learned by students in the study of processes topics:

- Binocular vision, commonwealth and paralytic strabismus,
- Pleoptic orthoptic treatment and surgical treatment strabismus.
- Angiopathy, angiosclerosis, neuroretinopathy and others.

3. Questions for the class:

1. The techniques and methods for determination of binocular vision,
2. The main features of friendly and paralytic strabismus,
3. Strabismus angle determination methods,
4. The classification of concomitant strabismus,
5. conservative and surgical methods for the treatment of strabismus,
6. The change of authority in hypertension, diabetes, thyroid disease, blood diseases, diseases of the cardiovascular system.

5. Questions for self-control:

#### CHECKLIST TOPIC PATHOLOGY OCULOMOTOR APPARATUS

Option 1

1. What is binocular vision.
2. What are the non-identical points of the retina.
3. When there is a human binocular fixation.
4. What are the two main types of strabismus.
5. What are the main symptoms of concomitant strabismus.
6. What are the visual function should be checked with the squint.
7. Name the apparatus for reconstruction and development of binocular vision.
8. What are the methods for determining the angle of strabismus, myopia.
9. How is it possible to identify the limits of the field of view of the simulation.
10. Name the unit for an objective study of visual acuity.

## Option 2

1. What are the identical point of the retina.
2. What methods can detect violations of binocular vision.
3. What is the minimum visual acuity necessary for the development of binocular vision.
4. What types of concomitant strabismus.
5. List the main features of paralytic strabismus.
6. Give the definition of amblyopia.
7. What are the methods of treatment of amblyopia.
8. What are the main group of operations for strabismus.

## CHECKLIST TOPIC Changes organs of sight under general diseases of the body

### Option 1

1. What are the main causes of exophthalmos.
2. What are the symptoms of cellulitis orbit.
3. How does the device determine the degree of an emergence of the eyeball.
4. Treatment of malignant orbital tumors.
5. Name a professional eye diseases.
6. What are the changes observed in the second stage of hypertension disease.
7. How sick is given the first group of disability-free.
8. To set the second group.
9. What are the most serious hereditary changes of the eyeball.
10. What are the hereditary changes in the lens.

### Option 2

1. What are the methods of diagnosis of tumors of the orbit.
2. What are the main symptoms of malignant tumors of the orbit.
3. What causes cellulitis orbit.
4. Principles of treatment of cellulitis orbit.
5. Who is given 3 disability-free.
6. What are the changes in the retina at the first stage idiopathic
7. Which occupational diseases are found in the eyes of health professionals.
8. What kind of eye disease often lead to disability of the body.
9. What are the hereditary diseases of the vascular tract of the eye.
10. What types of works are contraindicated in diseases of the lens.

## 5. Training and methodological support:

### 5.1. Main references:

1. Мармыш В.Г. Ophthalmology = Офтальмология [Электронный ресурс] : пособие/ В. Г. Мармыш, С. Н. Ильина, В. В. Романчук. -Гродно: ГрГМУ, 2021. -400 с.- URL: <https://www.books-up.ru/ru/book/ophthalmology-13930919>

### 8.2. Supplementary literature

1. Bhartiya S. The Glaucoma Screening Manual [Электронный ресурс]/ S. Bhartiya. -New Delhi, India: Jaypeedigital, 2022. -72 с.- URL: <https://www.jaypeedigital.com/book/9789354652219>
2. Rajan M. Color Atlas of Retina & Optic Nerve [Электронный ресурс]/ M. Rajan, N. R. Thomas. -New Delhi, India: Jaypeedigital, 2022. -370 с.- URL: <https://www.jaypeedigital.com/book/9789354651137>
3. Shukla Y. Clinical Pediatric Ophthalmology and Strabismus [Электронный ресурс]/ Y. Shukla, R. Saxena. -New Delhi, India: Jaypeedigital, 2023. -424 с.- URL: <https://www.jaypeedigital.com/book/9789354653537>



## 6. The list of questions and tasks for self-studies

<i>Sections and topics for the self-studying</i>	<i>Types and contents of the self-studies</i>
1. Mastering main methods of inspection	1. Development of inspection conjunctival cavity eversion of the upper eyelid, instill drops, laying of ointments. 2. The decision of situational problems 3. Abstract messages, reports
2 The development of additional methods	1. Sowing conjunctiva, lacrimal fluid intake. 2. The decision of situational problems 3. Abstract messages reports 4. Search interns ones.

### Module №10

#### "Injuries the organ of vision. Medical-social examination. Principles of treatment. Emergency aid for injuring eyes "

1. Purpose of the activity: to get acquainted with the clinical picture, the basic principles of treatment and prevention of damage to the eye and its appendages.

Learn how to provide emergency and first aid for various injuries the organ of vision, form a sympathetic understanding of the injuring, the timing of its appearance, shape, symptoms, course, preventive.

Objectives: To teach students:

1. to provide emergency care to patients with penetrating wounds,
2. to provide emergency care to patients with burns of the eyes,
3. The methods of removing small foreign bodies conjunctiva, cornea,
4. The dressing on the eye,
5. eye drops and eye ointment lay,
6. The basic principles of treatment of patients with ophthalmopathology.

2. Basic concepts that must be learned by students in the study of topics:

- Penetrating wounds of the eyeball,
  - Contusion injury to the eyes,
  - Burns eyes,
  - Low vision and blindness,
3. Questions to the occupation.
    1. Classification of damage to eyes.
    2. Absolute and relative signs of penetrating wound eyeball
    3. Clinical depending on the location of the wound,
    4. Methods of X-ray localization of the foreign body (Komberg - Baltina by Vogt)
    5. Complications of penetrating trauma (endophthalmitis, sympathetic ophthalmia, and siderosis chalicosis)
    6. Emergency care in penetrating wounds.
    7. Clinical depending contusion damage the severity of the injury,
    8. Eye Clinic of burns (severity)
    9. First aid for burns the eyes.
    10. Characteristics of disability groups in the pathology of the vision.

4. Questions for self-control:

Option 1

1. List the features of a penetrating wound of the cornea.
2. What are the complications of penetrating wounds of the eyeball.
3. What is the first medical aid in penetrating wounds of the eye.
4. List the methods for disposal of magnetic, foreign bodies from the eye.
5. The first medical aid for chemical burns of the eye.
6. Specify the agent for the treatment of traumatic corneal erosion.
7. Preventing the sympathetic inflammation.
8. Signs of corneal burn in powers.
9. Signs of the superior orbital fissure syndrome.
10. Changes in the lens of the eye with the blunt trauma.

#### Option 2

1. What are the signs of penetrating wounds of the sclera.
2. Signs siderosis.
3. Give the concept of sympathetic ophthalmia.
4. What changes in the anterior part of the eyeball can be at that sing eye injury.
5. What are the signs panoftalmita.
6. Symptoms electrophthalmia.
7. Types of traumatic iridocyclitis.
8. Treatment hemophthalmia.
9. Symptoms of third-degree burns.
10. Changes in the fundus in blunt trauma eye.

#### 5. Training and methodological support:

##### 5.1. Main references:

1. Мармыш В.Г. Ophthalmology = Офтальмология [Электронный ресурс] : пособие/ В. Г. Мармыш, С. Н. Ильина, В. В. Романчук. -Гродно: ГрГМУ, 2021. -400 с.- URL: <https://www.books-up.ru/ru/book/ophthalmology-13930919>

##### 8.2. Supplementary literature

1. Bhartiya S. The Glaucoma Screening Manual [Электронный ресурс]/ S. Bhartiya. -New Delhi, India: Jaypeedigital, 2022. -72 с.- URL: <https://www.jaypeedigital.com/book/9789354652219>
2. Rajan M. Color Atlas of Retina & Optic Nerve [Электронный ресурс]/ M. Rajan, N. R. Thomas. -New Delhi, India: Jaypeedigital, 2022. -370 с.- URL: <https://www.jaypeedigital.com/book/9789354651137>
3. Shukla Y. Clinical Pediatric Ophthalmology and Strabismus [Электронный ресурс]/ Y. Shukla, R. Saxena. -New Delhi, India: Jaypeedigital, 2023. -424 с.- URL: <https://www.jaypeedigital.com/book/9789354653537>

#### 6. The list of questions and tasks for self-studies

<i>Sections and topics for the self-studying</i>	<i>Types and contents of the self-studies</i>
1.mastering the basic methods of examination of patients with eye injuries.	1. inspection, emergency care, dressing patients, analysis of X-ray images with foreign bodies in the eye cavity. 2. The decision of situational problems 3 Abstract messages, reports
2 The development of additional methods	1.evaluation of electrophysiological characteristics with severe eye injuries. 2. The decision of situational problems 3.Abstract messages reports 4. Search interns ones.

