MINISTRY OF HEALTH OF THE REPUBLIC OF BELARUS
Educational Institution
BELARUSIAN STATE MEDICAL UNIVERSITY

APPROVED
by Rector of the Educational Institution «Belarusian State Medical University»
S.P.Rubnikovich
26.06.2024
Reg.# UD-091049/2425 /edu.

OPHTHALMOLOGY

Curriculum of the educational institution in the academic discipline for the specialty

1-79 01 07 «Dentistry»

2024

Curriculum is based on the educational program «Ophthalmology», approved 26.06.2024, registration # УД-091-049/2425/уч.; on the educational plan in the specialty 1-79 01 07 «Dentistry», approved 15.05.2024, registration # 7-07-0911-03/2425/mf.

COMPILERS:

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RECOMMENDED FOR APPROVAL:

by the Eye Diseases Department of the educational institution «Belarusian State Medical University»
(protocol # 20 dated 30.05.2024);

by the Scientific Methodological Council of the educational institution «Belarusian State Medical University»
(protocol # 18 dated 26.06.2024)

EXPLANATORY NOTE

«Ophthalmology» - the academic discipline of the module «General Clinical Surgical Module», which contains systematized scientific knowledge about the etiology, pathogenesis, clinical picture, methods of diagnosis, treatment and prevention of the vision organ diseases.

The aim of the discipline «Ophthalmology» is the formation of basic professional competencies for solving tasks of professional activity in the field of diagnostics and prevention of the vision organ diseases.

The objectives of the discipline «Ophthalmology» are to form students' scientific knowledge about the etiology and pathogenesis, clinical manifestations and complications, methods of diagnostics, treatment and prevention of the vision organ diseases, the skills and abilities necessary for:

examination of patients;

providing of emergency medical care for various injuries and of the vision organ diseases;

identification of the most important clinical manifestations of the most common eye diseases;

prevention of complications of the vision organ diseases in dental diseases;

identification eye diseases leading to a gradual decrease in vision and blindness.

The knowledge, skills, and abilities acquired during the study of the academic discipline «Ophthalmology» are necessary for the successful study of the academic disciplines: «Maxillofacial Orthopedics and Orthopedic Dentistry», «Maxillofacial Surgery and Outpatient Maxillofacial Surgery».

Studying the educational discipline «Ophthalmology» should ensure the formation of students' basic professional competencies: organize and provide medical assistance in emergency situations.

As a result of studying the discipline «Ophthalmology» the student should know:

etiology, pathogenesis, classification, clinical manifestations, methods of diagnostics, treatment and prevention of the most common diseases and injuries of the of the vision organ;

organization of eye care to the population;

visual functions and methods of their study;

types, methods of defining clinical refraction and astigmatism, ways of correcting anomalies of refraction and astigmatism, types of disorders of accommodation and correction of anisometropia;

ocular complications of dental diseases;

signs of the eyeball trauma (mechanical injuries, thermal, chemical and radiation burns, contusions);

the main eye diseases, leading to vision deterioration and blindness;

rules of medical ethics and deontology;

be able to:

plan and conduct communicative interaction with the patient, based on an assessment of his mental and personal characteristics, individual reaction to the disease;

prevent ocular complications of dental diseases;

study visual functions;

make a preliminary diagnosis in case of injuries and major eye diseases;

render emergency medical aid in case of eye trauma;

master:

assessment of intraocular pressure by the approximate (palpatory) method;

skills of removing foreign bodies from the conjunctiva of the eyeball;

skills of rendering emergency medical aid in burns and injures eyes.

Total number of hours for the study of the discipline is 90 academic hours, including 40 classroom hours and 50 hours of independent student work. Classroom hours according to the types of studies: lectures - 15 hours (including 6 hours of supervised student independent work (SSIW)), practical classes -25 hours.

Intermediate assessment is carried out according to the syllabus of the specialty in the form of a credit (7th semester).

Form of higher education - full-time.

ALLOCATION OF ACADEMIC TIME ACCORDING TO SEMESTERS OF STUDY

Code, name of the specialty	semester	Number of academic hours						Form of intermediate assessment
		total	in-class	including			out-of-class self-studies	
				lectures	supervised student independent work	practical classes		
1-79 01 07 «Dentistry»	7	90	40	9	6	25	50	credit

THEMATIC PLAN

Section (topic) name	Number of class hours	
	lectures (including SSIW)	Practical classes
1. General Ophthalmology	**1,5**	**5**
1.1. Ophthalmology, history of ophthalmology. Medical Ethics and Deontology. Anatomy, Physiology and Functions of the Eye	1,5	-
1.2. Visual Functions and Methods of Their Study	-	2
1.3. Clinical Methods in Ophthalmology	-	1
1.4. Optics, Refraction, Accommodation. Myopia	-	2
2. Special Ophthalmology	**13,5**	**20**
2.1. Diseases of the Eyelids, Conjunctiva and Lacrimal Apparatus	3	3
2.2. Diseases of the Cornea and Sclera	3	2
2.3. Diseases of the Lens	1,5	2
2.4. Diseases of the Uveal Tract	1,5	3
2.5. Glaucomas	1,5	5
2.6. Mechanical Injures	1,5	3
2.7. Burns	-	2
2.8. Ophthalmo-dental syndromes	1,5	-
Total hours	**15**	**25**

CONTENT OF THE EDUCATIONAL MATERIAL

1. General Ophthalmology

1.1. Ophthalmology, history of ophthalmology. Medical Ethics and Deontology. Anatomy, Physiology and Functions of the Eye

Ophthalmology, its content and tasks. The place of ophthalmology in medical science. The latest achievements of world and domestic ophthalmology, their importance in reducing the eye diseases and blindness. Ophthalmology as a field of surgery.

History of ophthalmology. The appearance and organization of ophthalmological care for the population in the Republic of Belarus.

The structure and level of diseases of the of the vision organ diseases, low vision and blindness. Preventive measures in the field of vision protection. The tasks of doctors in protecting the vision of the population, preventing diseases and eye damage. Professional selection, medical examination in ophthalmology. Disability group with eye diseases and injures.

Rules of medical ethics and deontology. Moral and ethical standards of behavior of medical workers, their relationships with patients and colleagues. The

concept of the principles of humanism, mercy, restraint, professionalism, confidentiality and tolerance.

Evolution of the eye. Development of the eye, stages of development. Formation of optic vesicle and optic stalk. Formation of lens vesicle. Formation of optic cup. Changes in the associated mesoderm. Development of various ocular structures.

The eyeball. Age dynamics, weight, diameter, shape of the eyeball. Fibrous coat of the eye (cornea and sclera). Vascular coat (uveal tissue). Iris, ciliary body, choroid. Structure and functions of the retina. Macula. Crystalline lens, vitreous, anterior and posterior chambers of the eye. Visual pathway. Optic nerve. Topographic anatomy of 4 parts of the optic nerve. Chiasm, optic tract, subcortical visual centers and cerebral cortex. Eyelids, anatomy and functions. Conjunctiva, anatomy and functions. Lacrimal apparatus (lacrimal gland, lacrimal sac, nasolacrimal duct and canaliculi). Oculomotor apparatus. Orbit, structure, contents, topographic anatomy, functions. Extraocular muscles and appendages of the eye. Vessels and nerves of the eye.

1.2. Visual Functions and Methods of Their Study

Physiology of vision phototransduction. Photochemical changes. Electrical changes. Processing and transmission of visual impulse. Pathology of visual functions: central field, peripheral field of vision, color vision, binocular vision.

Testing of visual acuity. The distant visual acuity. Snellen's test types. General physical and systemic examination. Visual acuity equivalents. Procedure of testing. Visual acuity for near. Distance visual acuity testing with and without correction and with a pinhole.

Perimetry. The visual field. Central field. Peripheral field of vision. Methods of estimating the visual fields. Kinetic and static perimeter. Kinetic versus static perimetry. Manual perimetry. Confrontation method. Campimetry. Goldmann's perimeter. Automated perimetry. Automated perimeters. Advantages of automated perimetry over manual perimetry. Interpertation of automated perimetry print out field charts. Testing strategies and programs. Diagnosis of glaucoma field defects on HFA single-field printout.

Colour vision is a function of the cones. Theories of colour vision. Red sensitive cone pigment. Green sensitive cone pigment. Blue sensitive cone pigment. Young-Helmholtz theory. Opponent colour theory of Hering. Types of the congenital disorders of color sight, their frequency. The role of color vision testing for diagnostics of damage to various parts of the visual organ.

Sense of contrast. The light sense. Light adaptation. Dark adaptation. Physiology of binocular vision. Congenital, essential, symptomatic hemeralopia. Types of congenital and acquired disorders of color vision, their frequency, the role of heredity.

1.3. Clinical Methods in Ophthalmology

General physical and systemic examination. Ocular examination. External Inspection of the eye. Pupillary reaction testing. Ocular motility testing.

Fundus examination. Diagnostic tests. Oblique illumination. Tonometry. Techniques of fundus examination. Fundus fluorescein angiography. Electroretinography and electrooculography. Visually evoked response (VER).

Ultrasonography. Special evaluation schemes. Evaluation of glaucoma case, squint epiphora dry eye, proptosis, refractive errors.

1.4. Optics, Refraction, Accommodation. Myopia

Optics. Light. Geometrical optics. Optics of the eye (visual optics).

Errors of refraction. Hypermetropia. Myopia. Astigmatism. Anisometropia. Aniseikonia.

Accommodation and its anomalies. Accommodation. Mechanism. Far point and near point. Range and amplitude. Anomalies of accommodation. Presbyopia. Insufficiency of accommodation. Paralysis of accommodation. Spasm of accommodation.

Determination of refraction errors. Objective refraction. Subjective refraction. Spectacles and contact lenses. Spectacles Contact lenses. Refractive surgery.

Myopia. The role of heredity. Modern theories of myopia. Principles of correction. Prevention of myopia.

2. Special Ophthalmology

2.1. Diseases of the Eyelids, Conjunctiva and Lacrimal Apparatus

Diseases of the Eyelids

Applied anatomy: cross anatomy, structure glands of eyelid, blood supply, nerve supply. Congenital anomalies. Oedema of eyelids.

Inflammatory disorders: blepharitis, chalazion, hordeolum internum, molluscum contagiosum.

Anomalies in the position of lashes and lid margin: trichiasis, entropion, ectropion, symblepharon, ankyloblepharon, blepharophimosis, lagophthalmos, blepharospasm, ptosis. Tumours. Injuries.

Diseases of the Conjunctiva

Applied anatomy: parts, structure, glands.

Inflammations of conjunctiva: infective conjunctivitis, bacterial, chlamydial, viral, allergic conjunctivitis, granulomatous conjunctivitis.

Degenerative conditions: pinguecula, pterygium, concretions.

Symptomatic conditions: hyperaemia, chemosis, ecchymosis, xerosis, discoloration.

Cysts and tumours: cysts of conjunctiva, tumours of conjunctiva.

Diseases of the Lacrimal Apparatus

Applied anatomy: structure, functions, secretion of tears, elimination of tears.

The tear film and the dry eye: Sjogren's syndrome.

The watering eye: etiology, clinical evaluation.

Dacryocystitis: congenital, chronic dacryocystitis, acute dacryocystitis, surgical technique of DCR and DCT.

Swellings of the lacrimal gland: dacryoadenitis, mickulicz's syndrome, dacryopes. Tumours.

2.2. Diseases of the Cornea and Sclera

Diseases of the Cornea

Anatomy and physiology: applied anatomy, applied physiology, congenital anomalies.

Inflammations of the cornea: ulcerative keratitis, non-ulcerative keratitis, superficial, deep.

Corneal degenerations: age-related corneal degenrations, pathological corneal degenerations, corneal dystrophies, anterior dystrophies, stromal dystrophies, posterior dystrophies.

Ectatic conditions of cornea: keratoconus, keratoglobus, keratoconus posterior. Abnormalities of cornea: transparency, corneal oedema, corneal opacity, corneal vascularization. Keratoplasty.

Diseases of the Sclera

Applied anatomy.

Inflammations of the: episcleritis, scleritis, anterior, posterior.

Blue sclera. Staphylomas: anterior, intercalary, ciliary, equatorial, posterior.

2.3. Diseases of the Lens

Anatomy and physiology: applied anatomy, applied physiology and biochemistry.

Cataract: congenital and developmental cataract, acquired cataract, management of cataract.

Surgical techniques for cataract extraction: intracapsular cataract extraction, conventional extracapsular cataract extraction. Manual small incision cataract surgery. Phacoemulsification. Surgical techniques of extracapsular cataract extraction for childhood cataract. Intraocular lens implantation. Complications of cataract surgery and their management.

Displacements of the lens: subluxation, dislocation.

Congenital anomalies of the lens.

2.4. Diseases of the Uveal Tract

Applied anatomy: iris, ciliary body, choroid. Congenital anomalies.

Inflammations (uveitis): general considerations, anterior uveitis, posterior uveitis, endophthalmitis and panophthalmitis, specific clinico-etiological types of uveitis.

Degenerative conditions of iris and choroid. Congenital anomalies.

Tumours of choroid, ciliary body and iris.

2.5. Glaucoma

Anatomy and physiology. Applied anatomy. Applied physiology.

General considerations. Definition and classification of glaucoma. Pathogenesis of glaucomatous ocular damage.

Indications and methods for measuring intraocular pressure by the approximate (palpatory) method.

Methods of glaucoma diagnostics: tonometry, electrotonometry, biomicroscopy, ophthalmoscopy, gonioscopy, perimetry. Methods of early diagnostics of glaucoma.

Congenital glaucomas: terminology, primary developmental glaucoma, developmental glaucoma with associated anomalies.

Primary open-angle glaucoma and related conditions: primary open-angle glaucoma, ocular hypertension, normal tension glaucoma.

Primary angle-closure glaucoma: latent glaucoma, intermittent glaucoma, acute congestive glaucoma, postcongestive angle-closure glaucoma, chronic closed angle glaucoma, absolute glaucoma.

Secondary glaucomas.

Surgical procedures for glaucoma.

Practical skill: assessment of intraocular pressure by the approximate (palpatory) method. Evaluation of the degree of eye density. Interpretation of results.

2.6. Mechanical Injuries

Mechanical injuries: extraocular foreign bodies, blunt trauma, perforating injuries, perforating injuries with retained intraocular foreign bodies (iofb), sympathetic ophthalmitis (etiology and pathogenesis, clinical forms, general and local treatment, prognosis, prevention).

Methods for determining and localizing foreign bodies in the eye, X-ray diagnostic. Emergency medical care, prevention treatment eye complications.

Wounds of the eyelids, conjunctiva and lacrimal apparatus, emergency medical care. Skills of removing foreign bodies from the conjunctiva of the eyeball. Technique for instilling eye drops, rules for applying ointments.

2.7. Burns

Burns of the eye: chemical, thermal, electrical, radiational injuries. radiation. Classification. Chemical injuries: acid burns, alkali burns. Thermal injuries. Electrical injuries. Radiational injuries: ultraviolet radiations, infrared radiations, ionizing radiational injuries. Emergency medical care.

Practical skills: instillation of eye drops, application of ointments.

2.8. Ophthalmo-dental syndromes

Ganglionitis (ciliary ganglionitis, naso-ciliary ophthalmia), neurofibromatosis, Mikulicz syndrome, Behcet's disease, Stevens-Johnson syndrome, Sjogren's disease. Diseases for which a common pathological process involves the eye and oral cavity.

ACADEMIC DISCIPLINE CURRICULAR CHART

Number of the section, topic	Name of the section, topic	Number of hours		Supervised student independent work	Practical skill	Form of control	
		lectures	practical classes			of practical skill	of current / intermediate assessment
	Lectures	**9**	–	**6**			
1.1.	Ophthalmology, history of ophthalmology. Medical Ethics and Deontology. Anatomy, Physiology and Functions of the Eye	1,5	–	–			
2.1.	Diseases of the Eyelids, Conjunctiva and Lacrimal Apparatus	1,5	–	1,5			Electronic test
2.2.	Diseases of the Cornea and Sclera	1,5	–	1,5			Electronic test
2.3.	Diseases of the Lens	–	–	1,5			Electronic test
2.4.	Diseases of the Uveal Tract	1,5	–	–			
2.5.	Glaucoma	1,5	–	–			
2.6.	Mechanical Injures	–	–	1,5			Electronic test
2.8.	Ophthalmo-dental syndromes	1,5	–	–			
	Practical classes	–	**25**	–			
1.1 1.2. 1.3.	Visual Functions and Methods of Their Study. Clinical Methods in Ophthalmology. Optics, Refraction, Accommodation. Myopia	–	5	–			Electronic test. Survey. Situational task decision
2.1. 2.2.	Diseases of the Eyelids, Conjunctiva and Lacrimal Apparatus. Diseases of the Cornea and Sclera.	–	5	–			Electronic test. Survey. Situational task decision

							Control work****
2.3. 2.4.	Diseases of the Lens. Diseases of the Uveal Tract	–	5	–			Electronic test. Survey. Situational task decision
2.5.	Glaucomas	–	5	–	Assessment of intraocular pressure by the approximate (palpatory) method	Performing a practical skill at the patient's bedside*	Electronic test. Survey. Abstracts presentation. Situational task decision
2.6. 2.7.	Mechanical Injures Burns	–	5	–	Removing foreign bodies from the conjunctiva of the eyeball Rendering emergency medical aid in burns and eyes injures (instillation of eye drops, application of ointments)	Performing a practical skill at the patient's bedside* Performing a practical skill at the patient's bedside*	Electronic test. Survey. Situational task decision. Credit
	Всего:	**9**	**25**	**6**			

*This is a mandatory form of current certification

INFORMATION AND INSTRUCTIONAL UNIT

LITERATURE

Basic (relevant):

1. Ophthalmology : textbook / O. P. Vitovska [и др.]; ed.by O. P. Vitovska. - Kyiv : AUS Medicine Publishing, 2017. - 395 p.

Additional:

2. Офтальмология для иностранных учащихся по специальности «Стоматология»= Ophthalmology for the international students of the speciality «Stomatology»: учеб.-метод. пособие / Л. Н. Марченко и др. – Минск : БГМУ, 2016. - 35 с.

3. Офтальмология по специальности «Стоматология»= Ophthalmology for the speciality «Stomatology»: метод. реком./ Л. Н. Марченко и др. – Минск : БГМУ, 2016. - 32 с.

METHODOLOGICAL RECOMMENDATIONS FOR THE ORGANIZATION AND PERFORMANCE OF STUDENT INDEPENDENT WORK IN THE ACADEMIC DISCIPLINE

The time allocated for independent work can be used by students for:
preparing for lectures, practical classes;
studying the topics (issues) designed for independent work;
problem and situational task solving;
preparing for tests and credit in the academic discipline;
preparing thematic reports, abstracts, presentations;
compiling a review of scientific literature on a given topic;
compilation of a thematic selection of literature sources, Internet sources.

METHODOLOGICAL RECOMMENDATIONS FOR THE ORGANIZATION AND PERFORMANCE OF SUPERVISED STUDENT INDEPENDENT WORK IN THE ACADEMIC DISCIPLINE

Main forms of supervised student independent work:
preparation and presentation of abstracts;
studying topics and problems that have not been discussed at the lectures;
computer testing.

LIST OF AVAILABLE DIAGNOSTIC TOOLS

The following forms are used for competence assessment:
electronic test;
survey;
situational task decision;
control work;
abstract presentation.

LIST OF AVAILABLE TEACHING METHODS

Traditional method (lectures, practical classes);
Active (interactive) methods:
Problem-Based Learning (PBL);
Case-Based Learning (CBL);
Research-Based Learning (RBL).

LIST OF PRACTICAL SKILLS

Name of practical skills	Form of practical skills control
1. Assessment of intraocular pressure by the approximate (palpatory) method	Performing a practical skill at the patient's bedside
2. Removing foreign bodies from the conjunctiva of the eyeball	Performing a practical skill at the patient's bedside
3. Rendering emergency medical aid in burns and injures eyes (instillation of eye drops, applying of ointments)	Performing a practical skill at the patient's bedside

PROTOCOL OF THE CURRICULUM APPROVAL BY OTHER DEPARTMENTS

Title of discipline requiring approval	Department	Amendments to the curriculum in the academic discipline	Decision of the department, which designed the curriculum (date, protocol №)
1. Maxillofacial Orthopedics and Orthopedic Dentistry	Department of orthopedic dentistry and orthodontics	No suggestions or changes	Protocol # 14 dated 12.06.2024
2. Maxillofacial Surgery and Outpatient Maxillofacial Surgery	Departments of maxillofacial surgery and facial plastic surgery	No suggestions or changes	Protocol # 14 dated 12.06.2024

COMPILERS/AUTHORS:

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Associate Professor of the Eye Diseases Department of the educational institution «Belarusian State Medical University», Ph. D., Associate Professor _____ M.F.Dzhumova

Curriculum content, composition and the accompanying documents comply with the established requirements.

Dean of the Medical Faculty for International Students of the educational institution «Belarusian State Medical University» _____ O.S.Ishutin

24.06.2024

Methodologist of the Educational and Methodological Department of the Office of Educational Activities of the educational institution «Belarusian State Medical University» _____ S.V.Zaturanova

24.06.2024