

MINISTRY OF HEALTH OF THE REPUBLIC OF BELARUS
EDUCATIONAL INSTITUTION
BELARUSIAN STATE MEDICAL UNIVERSITY

Контрольный
экземпляр



APPROVED

by First Vice-Rector, Professor

I.N.Moroz

29.06.2020

Reg. # UD-4.538/2021 /edu.

OPHTHALMOLOGY

**Curriculum of higher educational institution
in the educational discipline for the specialty:**

1-79 01 07 «Stomatology»

Cirriculum is based on the educational program «Ophthalmology» approved on 29.06.2020, registration № УД-L.538/1920/уч.

COMPILERS:

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RECOMMENDED FOR APPROVAL:

by the Eye Diseases Department of the Educational Institution «Belarusian State Medical University»
(protocol № 14 of 12.06.2020);

by the Scientific Methodical Council of the Educational Institution «Belarusian State Medical University»
(protocol № 10 of 26.06.2020)

EXPLANATORY NOTE

«Ophthalmology» – is the educational discipline containing modern scientific data on etiology, pathogenesis, clinical picture, diagnostics, treatment and prevention of the vision organ diseases.

The curriculum of the discipline «Ophthalmology» aims for studying the latest scientific data on the system pathology with ophthalmologic and dental manifestations, eye diseases, optics and refraction, investigation methods of eye and visual functions.

The purpose of teaching and studying the discipline «Ophthalmology» consists of forming and the acquisition of scientific knowledge about of diagnostics and treatment of eye diseases.

The tasks of studying the discipline is to acquire competence, based on the student's ability to search for educational and informational resources and to master the methods for gaining and analyzing the knowledge:

- the most important clinical manifestations of eye widespread diseases;
- basic concepts about the diagnosis diseases of eye, ways of studying the eye, conjunctiva, eyelid and lacrimal apparatus, visual functions;
- the most important clinical features, typical for systemic pathology with eye and dental manifestations;
- basic concepts of ocular complications prevention of dental disease;
- basic concepts of eye diseases, causing of vision problems and blindness;
- basic concepts of rendering emergency medical aid ways in case of various injuries and eye diseases;

The tasks of teaching the discipline «Ophthalmology» include the formation of social, personal and professional competences, based on the knowledge and application of:

- ability to identify the symptoms of eye diseases and ocular complications of dental disease;
- methods of diagnosis of diseases of eyes, contributing to the formation of clinical thinking in compliance with the rules of medical ethics and deontology;
- methods of diagnostics of the main eye diseases, leading to vision deterioration and blindness;
- methods of rendering emergency medical aid in various injuries and eye diseases.

Teaching and successful studying of the discipline «Ophthalmology» is based on the knowledge of the following disciplines acquired by the students:

Medical and Biological Physics. Medical devices and equipment used in ophthalmology.

Medical Biology and General Genetics. Cytobiology. Protozoology. Elementary biology. Filo-opto-morfogenez of the eye.

Latin Language. Knowledge of Latin and Greek derivation and a certain minimum of terminology in Latin.

Human Anatomy. Structure of the eyeball.

Histology, Cytology, Embryology. Methods of histologic and cytologic studies.

Normal Physiology. Eye. Functions.

Microbiology, Virology, Immunology. Infectious and parasitic diseases, their microbiological characteristics. Concept on immunity and allergy. General characteristics of reactions of cellular and humoral immunity reactions. Carrying out dab, crops, scraping.

Pathological Anatomy. Inflammation: concept, etiology and pathogenesis, classification (common inflammation, specific inflammation).

Pharmacology. Mechanisms of medicine effect, dosage and ways of introduction. Systematization of medicines according to their effect.

As a result of studying the discipline (name of the discipline) the student should

know:

- organization of eye care to the population;
- visual functions and methods of their study, pathology of visual functions;
- types, methods of defining clinical refraction and astigmatism, ways of correcting anomalies of refraction and astigmatism, accommodation and anisometropia;
- etiology, classification, pathogenesis, clinical picture, diagnostics and differential diagnostics, methods of preventing and treating the most widespread diseases and injuries of the vision organ;
- ocular complications of dental disease;
- systemic pathology with eye and dental manifestations;
- signs of eyeball the trauma (mechanical injuries, thermal, chemical and radiation burns, penetrating ocular injury);
- the eyes main diseases, leading to vision deterioration and blindness.

be able to:

- study visual functions;
- determine preliminary diagnosis in injuries and major eye diseases;
- prevent ocular complications of dental disease;
- render emergency medical aid in case of eyes trauma.

master:

- assessment of intraocular pressure by palpation;
- removing foreign bodies from the conjunctiva of the eyeball;
- skills of rendering emergency medical aid in burns and various injuries eyes.

The structure of the curriculum of the discipline «Ophthalmology» includes two sections.

Total number of hours for the study of the discipline is 62 academic hours. Classroom hours according to the types of studies: lectures - 16 hours, practical classes - 25 hours, student independent work (self-study) - 21 hours.

Current assessment is carried out according to the syllabus of the specialty in the form of graded credit (7 semester).

Form of higher education - full-time.

**ALLOCATION OF ACADEMIC TIME
ACCORDING TO SEMESTERS OF STUDY**

Code, Name of Speciality	Semester	Number of Hours for Studies					Forms of assessment
		total	classroom classes	Out of them		independent extraclasses	
				lectures	practical classes		
1-79 01 07 «Dentistry»	7	62	41	16	25	21	graded credit

THEMATIC PLAN

Section (topic) name	Number of class hours	
	lectures	practical classes
1. GENERAL OPHTHALMOLOGY	2	5
1.1. Ophthalmology, history of ophthalmology	1	-
1.2. Anatomy and development of the eye. Physiology of eye and vision	1	-
1.3. Visual functions (visual acuity, visual fields, colour vision, dark adaptation, binocular vision)	-	2
1.4. Clinical methods in ophthalmology	-	1
1.5. Optics and refraction. Accommodation. Myopia.	-	2
2. SPECIAL OPHTHALMOLOGY	14	20
2.1. Diseases of the Eyelids, Conjunctiva and Lacrimal Apparatus	2	2
2.2. Diseases of the Cornea and Sclera	2	2
2.3. Diseases of the Lens	2	1
2.4. Diseases of the Uveal Tract	2	5
2.5. Glaucoma	2	5
2.6. Mechanical Injuries	1	4
2.7. Non-mechanical injuries. Chemical, thermal, electrical, radiational injuries (burns)	1	1
2.8. Ophthalmic-dental syndromes	2	-
Total hours	16	25

CONTENT OF THE EDUCATIONAL MATERIAL

1. GENERAL OPHTHALMOLOGY

1.1. Ophthalmology, history of Ophthalmology

Ophthalmology, its contents and tasks; history of Ophthalmology.

1.2. Anatomy and development of the eye. Physiology of eye and vision

Anatomy and Development of the eye.

The eyeball. Anteroposterior diameter, horizontal diameter, vertical diameter, circumference, volume, weight. Fibrous coat. Cornea. Limbus. Sclera. Vascular coat (uveal tissue). Iris. Ciliary body. Choroid. Nervous coat (retina segments). Retina. Macula. Optic nerve. Visual pathway. Anterior segment. Anterior chamber. Posterior chamber. Crystalline lens. Vitreous. Orbit, extraocular muscles and appendages of the eye. Eyelids. Conjunctiva. The lacrimal apparatus. Lacrimal gland. Lacrimal sac. Nasolacrimal duct and canaliculi.

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.

1.3. Visual functions (visual acuity, visual fields, colour vision, dark adaptation, binocular vision)

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. Interpretation 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.

Sense of contrast. The light sense. Light adaptation. Dark adaptation. Physiology of binocular vision.

1.4. 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.

1.5. Optics and 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.

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 degenerations, 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.

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.

2.6. Mechanical Injuries

Mechanical injuries: extraocular foreign bodies, blunt trauma, perforating injuries, perforating injuries with retained intraocular foreign bodies (iofb), sympathetic ophthalmitis.

2.7. Non-mechanical injuries. Chemical, thermal, electrical, radiational injuries (burns)

Non-mechanical injuries. Chemical injuries: acid burns, alkali burns. Thermal injuries. Electrical injuries. Radiational injuries: ultraviolet radiations, infrared radiations, ionizing radiational injuries.

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.

EDUCATIONAL DISCIPLINE CURRICULAR CHART

Number of the section, topic	Name of the section, topic	Number of hours		Self-studies	Form of control
		lectures	practical		
1.	GENERAL OPHTHALMOLOGY	2	5	5	
1.1.	Ophthalmology, history of ophthalmology	1	-	1	
1.2.	Anatomy and development of the eye. Physiology of eye and vision	1	-	1	
1.3.	Visual functions (visual acuity, visual fields, colour vision, dark adaptation, binocular vision)	-	2	1	computer tests, interview
1.4.	Clinical methods in ophthalmology	-	1	1	interview, abstract presentation
1.5.	Optics and refraction, accommodation. Myopia	-	2	1	Interview, reports on classroom practical exercises with their oral presentation
2.	SPECIAL OPHTHALMOLOGY	14	20	16	
2.1.	Diseases of the eyelids, conjunctiva and lacrimal apparatus	2	2	3	computer tests, interview, abstract presentation
2.2.	Diseases of the cornea and sclera	2	2	3	oral quiz, test, interview
2.3.	Diseases of the lens	2	1	2	oral quiz, control questions, interview
2.4.	Diseases of the uveal tract	2	5	2	computer tests, oral quiz, interview

2.5. Glaucomas	11					computer tests, written quiz, control questions, interview, abstracts presentation
2.6. Mechanical injuries	2	5	2			computer tests, control questions, interview
2.7. Non-mechanical injuries. Chemical, thermal, electrical, radiational injuries (burns)	1	4	2			interview
2.8. Ophthalmic-dental syndromes	1	1	2			
	2	-	-			Graded credit
	16	25	21			

INFORMATION AND METHODOLOGICAL UNIT

LITERATURE

Basic (relevant):

1. Ophthalmology : textbook / O.P.Vitovska [и др.] ; ed.by O.P.Vitovska. – Kyiv : AUS Medicine Publishing, 2017. – 648 p.

Additional:

2. Khurana, A.K. Comprehensive Ophthalmology / A.K.Khurana. 5th edition. New Delhi: Neva International (P) Limited, Publisherrsm 2012. – 637 p.
3. Офтальмология для иностранных учащихся по специальности «Стоматология»= **Ophthalmology for the international students of the speciality «Dentistry»** учеб.-метод. пособие./ Л.Н.Марченко и др. – Минск: БГМУ, 2016. – 35 с.
4. Офтальмология по специальности «Лечебное дело»= **Ophthalmology for the speciality «Dentistry»**: метод. реком./ Л.Н.Марченко и др. – Минск: БГМУ, 2016. – 32 с.

LIST OF AVAILABLE DIAGNOSTIC TOOLS

The following forms are used for the diagnosis of competencies:

1. Oral form:
 - interview;
 - credit.
2. Written form:
 - quiz;
 - control questions;
 - abstract presentation.
3. Oral-written form:
 - reports on classroom practical exercises with their oral defense.
4. Technical form:
 - computer test.

LIST OF PRACTICAL SKILLS

1. Assessment of intraocular pressure by palpation.
2. Removing foreign bodies from the conjunctiva of the eyeball.
3. Instillation of eye drops, ointments laying.

LIST OF LECTURES

1. Ophthalmology, history of Ophthalmology. Anatomy and Development of the Eye. Physiology of Eye and Vision.
2. Diseases of the Eyelids, Conjunctiva and Lacrimal Apparatus.
3. Diseases of the Cornea and Sclera.
4. Diseases of the Lens.
5. Diseases of the Uveal Tract.
6. Glaucoma.
7. Mechanical Injuries. Non-mechanical injuries. Chemical, thermal, electrical, radiational injuries (burns).
8. Ophthalmo-dental syndromes.

LIST OF PRACTICAL CLASSES

1. Visual functions (visual acuity, colour vision, perimetry, dark adaptation, binocular vision). Clinical Methods in Ophthalmology. Optics and refraction, accommodation. Myopia.
2. Diseases of the Eyelids, Conjunctiva and Lacrimal Apparatus. Diseases of the Cornea and Sclera. Diseases of the Lens.
3. Diseases of the Uveal Tract.
4. Glaucoma.
5. Mechanical Injuries. Non-mechanical injuries. Chemical, thermal, electrical, radiational injuries (burns).

**PROTOCOL OF THE CURRICULUM APPROVAL
BY OTHER DEPARTMENTS**

Title of the discipline requiring approval	Department	Amendments to the curriculum of the academic discipline	Decision of the department, which designed the curriculum (date, protocol №)
1. Human Anatomy	Department of Human Anatomy	No suggestions or changes	Protocol № 14 of 12.06.2020
2. Normal Physiology	Department of Normal Physiology	No suggestions or changes	Protocol № 14 of 12.06.2020

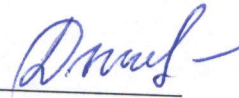
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Curriculum content, composition and accompanying documents comply with established requirements.

Dean of the Medical Faculty of
International Students of the
Educational Institution
«Belarusian State Medical
University»

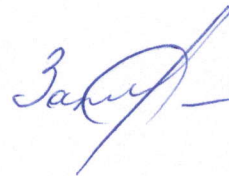
26.06. 2020



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