

SYLLABUS

1. General information on the course

Full course name	Ophthalmology
Full official name of a higher education institution	Sumy State University
Full name of a structural unit	Medical Institute. Department of Oncology and Radiology
Author(s)	Kuzenko Olena Volodymyrivna, Vynnychenko Ihor Oleksandrovych
Cycle/higher education level	The Second Level Of Higher Education, National Qualifications Framework Of Ukraine – The 7th Level, QF-LLL – The 7th Level, FQ-EHEA – The Second Cycle
Semester	2 тижні протягом 7 -го семестру
Workload	The volume of the course is 5 ECTS credits, 150 hours, of which 36 hours are contact work with the teacher (36 hours of practical classes), 114 hours is independent work.
Language(s)	English

2. Place in the study programme

Relation to curriculum	Elective course available for study programme "Medicine"
Prerequisites	Ophthalmology as a discipline is based on the study by students of the etiology, pathogenesis, genetic and molecular basis of the development of eye diseases, the study of their diagnosis and treatment. In previous courses, students studied medical genetics, radiology, pharmacology, therapy and surgery are studied in parallel, which allows to study the discipline in combination with therapeutic and general surgical pathologies.
Additional requirements	none
Restrictions	none

3. Aims of the course

The academic discipline aims to study theoretical and practical knowledge on the etiology of eye diseases, typical clinical manifestations, methods of diagnosis, treatment and rehabilitation of patients with diseases of the visual organ appropriate to the training of the doctor.

4. Contents

Topic 1 Anatomical and topographic features of the organ of vision.

The structure of the eyeball and the appendage of the eye, conduction pathways and visual centers. Physiology of central and peripheral vision, color perception (mechanism of visual sensation, color vision), their age norm and disorders. Topographic anatomy of the eye and orbit, possible ways of spreading the infection to the cranial cavity and orbit. Normal properties of the anterior (conjunctiva, sclera, cornea, anterior chamber, iris, pupil) and posterior (lens, vitreous, retina, choroid, optic disc) segment of the eye.

Topic 2 Refraction and accommodation

Fundamentals of physiological optics, types of clinical refraction (myopia, hyperopia, astigmatism, presbyopia), their clinic, possible complications, principles of treatment and correction from the standpoint of evidence-based medicine, the development of refraction in the age aspect. The mechanism of accommodation, its value in different types of refraction, the most common accommodation disorders. Risk factors for accommodation spasm and myopia. Anatomy of the refractive media of the eye (cornea, moisture of the anterior and posterior chambers, lens, vitreous).

Topic 3 Diseases of the eyelids and orbits.

Etiology, pathogenesis, clinical manifestations, methods of diagnosis and treatment from the standpoint of evidence-based medicine of inflammatory diseases of the protective and adnexal apparatus of the eye (barley, meibomianitis, blepharitis), anti-epidemic measures. Phlegmon and ocular abscess: etiology, clinic, complications, emergency care and treatment tactics. Torsion, inversion of the eyelids, lagophthalmos, ptosis: causes, diagnosis, treatment tactics, complications.

Topic 4 Diseases of the lacrimal organs.

Chronic and acute dacryocystitis in adults: etiology, clinical manifestations, diagnostic methods, possible complications, treatment tactics from the standpoint of evidence-based medicine. Neonatal dacryocystitis, acute dacryoadenitis: etiology, clinic, diagnosis, possible complications, treatment.

Topic 5 Pathology of the muscular apparatus of the eye.

Physiology of binocular vision, conditions of its occurrence and violation. Types of strabismus, causes, diagnostic methods. The mechanism of common and paralytic strabismus, their clinical manifestations, diagnostic methods, differential diagnosis and treatment tactics from the standpoint of evidence-based medicine. The role of pathology of pregnancy and childbirth in the occurrence of strabismus. Nystagmus, types, therapeutic principles.

Topic 6 Diseases of the conjunctiva.

Etiology, pathogenesis, clinical manifestations, methods of diagnosis of bacterial and viral conjunctivitis, treatment from the standpoint of evidence-based medicine, anti-epidemic measures. Trachoma: etiology, classification, clinic, diagnosis, complications, principles of treatment, prevention of epidemic outbreaks. Dystrophic changes of the conjunctiva - pingvecula and pterygium, etiology, pathogenesis, clinical manifestations, methods of diagnosis and treatment.

Topic 7 Diseases of the cornea and sclera (part 1)

Keratitis: etiology, clinic, diagnostic methods, possible complications, principles of treatment from the standpoint of evidence-based medicine. Creeping corneal ulcer: etiology, clinic, complications, treatment tactics. The concept of primary and secondary corneal dystrophies, clinical features, prognosis of the most common forms (nodular, lattice, spotted, epithelial-endothelial, tapeworm).

Topic 8 Diseases of the cornea and sclera (part 2)

Sclerites and episclerites: etiology, clinical manifestations, possible complications, principles of treatment from the standpoint of evidence-based medicine

Topic 9 Glaucoma.

The mechanism of production and outflow of intraocular fluid. Glaucoma: the mechanism of development of different types of glaucoma, classification, clinic, research methods, to determine the tactics of management and dispensary supervision of patients with glaucoma, the principles of treatment from the standpoint of evidence-based medicine. Acute attack of angle-closure glaucoma, emergency care. Congenital glaucoma; etiology, pathogenesis, clinical manifestations, diagnostic methods, treatment tactics. Mechanism of action of cholinomimetics, beta-blockers, carbonic anhydrase inhibitors, osmotic diuretics.

Topic 10 Diseases of the optic nerve.

Optic neuritis: etiology, clinical classification, clinic, topical diagnosis, differential diagnosis and treatment from the standpoint of evidence-based medicine. Features of the clinical course of toxic neuritis, emergency care. Optic nerve atrophy: etiology, types, clinical manifestations, differential diagnosis and treatment from the standpoint of evidence-based medicine.

Topic 11 Diseases of the lens. Pathology of the vitreous.

Cataract: definition, etiopathogenesis of age-related and congenital cataracts, classification, clinic, diagnostic methods, complications of age-related cataracts, principles of treatment from the standpoint of evidence-based medicine. Features of cataracts of toxic, radiation, at the general and inherited diseases. Aphakia: its symptoms and methods of correction. Pathogenetic mechanisms of intraocular hemorrhage; the role of imbalance of the pro- and anticoagulant blood system. Classification of hemophthalmos, clinical manifestations; methods of diagnosis and choice of treatment tactics, depending on the severity.

Topic 12 Disease of the choroid.

Uveitis: etiology, pathogenesis, classification, clinic, complications, principles of treatment from the standpoint of evidence-based medicine. Differential diagnosis of iridocyclitis and acute conjunctivitis and acute glaucoma. Features of uveitis in children.

Topic 13 Diseases of the retina.

Etiology, clinic, diagnostic methods, differential diagnosis and treatment of acute circulatory disorders in retinal vessels (thrombosis, embolism). Age-related macular degeneration, etiology, pathogenesis, clinical forms, diagnostic methods, principles of treatment from the standpoint of evidence-based medicine. Classification of retinal detachments and their clinical manifestations and diagnostic criteria. Primary retinal detachment: etiopathogenesis, clinic, modern methods of treatment. Differential diagnosis of primary and secondary exfoliation. Prevention of blindness due to vascular pathology of the visual organ.

<p>Topic 14 Eye pathology in general diseases.</p> <p>Pathogenetic mechanisms of damage to the visual system in diabetes mellitus and endocrine ophthalmopathy, hypertension, atherosclerosis. Clinical manifestations of diabetic damage to the visual system, complications, principles of treatment from the standpoint of evidence-based medicine, prognosis. Endocrine ophthalmopathy: classification, clinical manifestations, modern methods of diagnosis and treatment of endocrine ophthalmopathy.</p>
<p>Topic 15 Eye's tumors.</p> <p>Etiology, pathogenesis, clinical manifestations, methods of diagnosis and treatment from the standpoint of evidence-based medicine of benign and malignant tumors of the eye and adnexa in adults and children. Prevention of blindness.</p>
<p>Topic 16 Damage to the organ of vision.</p> <p>Classification of eye injuries. Absolute and relative signs of penetrating eyeball injuries. Methods of diagnosis of intraocular foreign bodies. Purulent complications of penetrating eye injuries (endo-, panophthalmitis): clinic, principles of treatment, prevention. Sympathetic inflammation: etiopathogenesis, prevention. The main manifestations of eye contusions (hyphema, hemophthalmos, subconjunctival scleral rupture, traumatic mydriasis, iridodialysis, dislocations and subdislocations of the lens, ruptures of the choroid, retinal detachment) and treatment tactics in them.</p>
<p>Topic 17 Burns of the visual organ. Emergency care.</p> <p>Classification of eye burns (by origin, degree), stage, clinic, diagnostic methods, possible complications, principles of emergency care. Electroophthalmia: causes, clinic, treatment tactics.</p>
<p>Topic 18 Final control class: differential credit.</p> <p>Final control class: differential credit.</p>

5. Intended learning outcomes of the course

After successful study of the course, the student will be able to:

LO1	Analyze, interpret and use knowledge in practice the current state of affairs and achievements in the field of ophthalmology, basic concepts, theories, hypotheses about the etiology of eye diseases
LO2	Evaluate information about the diagnosis in the health care facility, its unit, using a standard procedure, using knowledge of the structure of the visual organ, based on the results of laboratory and instrumental studies.
LO3	Be able to identify and record the leading clinical symptom or syndrome by making an informed decision using preliminary results data examination of the patient, knowledge of the structure of the organ of vision, adhering to the appropriate ethical and legal norms. Be able to establish the most probable diagnosis of disease. Assign laboratory and/or instrumental research ophthalmic patients. Carry out differential diagnosis of eye diseases. Establish a preliminary and clinical diagnosis.

LO4	Determine the necessary mode of work, rest, and nutrition during the treatment of eye diseases in a health care facility based on a previous clinical diagnosis, using knowledge of the structure of the visual organ, following relevant ethical and legal norms by making an informed decision according to existing algorithms and standard schemes.
LO5	Determine the principles and nature of treatment (conservative, operative) of eye diseases. Be able to perform medical manipulations. Determine the tactics of providing emergency medical care and provide emergency medical care based on the diagnosis of emergency.

7. Teaching and learning activities

7.1 Types of training

<p>Topic 1. Anatomical and topographic features of the organ of vision.</p> <p>pr.tr.1 "Anatomical and topographic features of the organ of vision." (full-time course)</p> <p>The structure of the eyeball and the appendage of the eye, conduction pathways and visual centers. Physiology of central and peripheral vision, color perception (mechanism of visual sensation, color vision), their age norm and disorders. Dark adaptation: types of disorders, diagnostic methods. Topographic anatomy of the eye and orbit, possible ways of spreading the infection to the cranial cavity and orbit. Normal properties of the anterior (conjunctiva, sclera, cornea, anterior chamber, iris, pupil) and posterior (lens, vitreous, retina, choroid, optic disc) segment of the eye. Visual acuity and methods of its research. Practical work in the classroom involves the study of visual acuity according to the tables of Golovin-Sivtsev, Orlova; study of visual acuity in persons who do not see the first row of the table; study of the field of view by the control method and on the perimeter, study of color vision according to Rabkin's tables, conducting an external examination of the eye with inversion of the upper eyelid, evaluation of the obtained data. Get acquainted with the methods of ophthalmoscopy (direct, indirect) and biomicroscopy, their interpretation. Role games.</p>
<p>Topic 2. Refraction and accommodation</p> <p>pr.tr.2 "Refraction and accommodation" (full-time course)</p> <p>Fundamentals of physiological optics, types of clinical refraction (myopia, hyperopia, astigmatism, presbyopia), their clinic, possible complications, principles of treatment and correction from the standpoint of evidence-based medicine, the development of refraction in the age aspect. The mechanism of accommodation, its value in different types of refraction, the most common accommodation disorders. Risk factors for accommodation spasm and myopia. Anatomy of the refractive media of the eye (cornea, moisture of the anterior and posterior chambers, lens, vitreous). In the classroom to investigate refraction by subjective and objective methods, to interpret the obtained data; in the role play to make a differential diagnosis of accommodation spasm and true myopia; to write a prescription for glasses for people with presbyopia.</p>
<p>Topic 3. Diseases of the eyelids and orbits.</p>

pr.tr.3 "Diseases of the eyelids and orbits." (full-time course)

Etiology, pathogenesis, clinical manifestations, methods of diagnosis and treatment from the standpoint of evidence-based medicine of inflammatory diseases of the protective and adnexal apparatus of the eye (barley, meibomianitis, blepharitis, dacryocystitis), anti-epidemic measures. Phlegmon and abscess of the orbit: etiology, clinic, complications, emergency care and treatment tactics. Torsion, inversion of the eyelids, lagophthalmos, ptosis: causes, diagnosis, treatment tactics, complications

Topic 4. Diseases of the lacrimal organs.

pr.tr.4 "Diseases of the lacrimal organs." (full-time course)

Chronic and acute dacryocystitis in adults: etiology, clinical manifestations, diagnosis, possible complications, treatment tactics from the standpoint of evidence-based medicine. Neonatal dacryocystitis, acute dacryoadenitis: etiology, clinic, possible complications, treatment. The study of this topic involves practical work in the classroom with mastering the methods of Schirmer's test, tubular and lacrimal-nasal tests, interpretation of the level of tear production with further discussion; application of virtual simulation (watching movies on the technique of probing the nasolacrimal ducts in children and dacryocystorhinostomy in adults) with further discussion.

Topic 5. Pathology of the muscular apparatus of the eye.

pr.tr.5 "Pathology of the muscular apparatus of the eye." (full-time course)

Physiology of binocular vision, conditions of its occurrence and violation. Types of strabismus, causes, diagnostic methods. The mechanism of common and paralytic strabismus, their clinical manifestations, diagnostic methods, differential diagnosis and treatment tactics from the standpoint of evidence-based medicine. In the classroom to determine the range of motion of the eyeball, to get acquainted with the method of studying the nature of vision on a 4-point color test; detection of heterophoria with the help of Maddox bacillus, determination of the angle of strabismus according to Hirschberg. Diagnose the impressions of III, IV, VI pairs of cranial nerves in the form of situational tasks.

Topic 6. Diseases of the conjunctiva.

pr.tr.6 "Diseases of the conjunctiva." (full-time course)

Etiology, pathogenesis, clinical manifestations, methods of diagnosis of bacterial and viral conjunctivitis, treatment from the standpoint of evidence-based medicine, anti-epidemic measures. Trachoma: etiology, classification, clinic, diagnosis, complications, principles of treatment, prevention of epidemic outbreaks. Dystrophic changes of the conjunctiva - pingvecula and pterygium, etiology, pathogenesis, clinical manifestations, methods of diagnosis and treatment. The study of this topic involves practical work in the classroom with mastering the method of research of the conjunctiva by focal lighting and taking cultures from the conjunctiva for bacterial examination with further discussion of the results and the appointment of adequate treatment.

Topic 7. Diseases of the cornea and sclera (part 1)

pr.tr.7 "Diseases of the cornea and sclera" (full-time course)

Keratitis: etiology, clinic, diagnostic methods, possible complications, principles of treatment from the standpoint of evidence-based medicine. Creeping corneal ulcer: etiology, clinic, complications, treatment tactics. The concept of primary and secondary corneal dystrophies, clinical features, prognosis of the most common forms (nodular, lattice, spotted, epithelial-endothelial, tapeworm). The study of this topic involves practical work in the classroom (to assess the sensitivity of the cornea, biomicroscopy to assess fresh and old corneal opacity, their differential diagnosis) with further discussion.

Topic 8. Diseases of the cornea and sclera (part 2)

pr.tr.8 "Diseases of the cornea and sclera (part 2)" (full-time course)

Sclerites and episclerites: etiology, clinical manifestations, possible complications, principles of treatment from the standpoint of evidence-based medicine

Topic 9. Glaucoma.

pr.tr.9 "Glaucoma." (full-time course)

The mechanism of production and outflow of intraocular fluid. Glaucoma: the mechanism of development of different types of glaucoma, classification, clinic, research methods, to determine the tactics of management and dispensary supervision of patients with glaucoma, the principles of treatment from the standpoint of evidence-based medicine. Acute attack of angle-closure glaucoma, emergency care. Congenital glaucoma; etiology, pathogenesis, clinical manifestations, diagnostic methods, treatment tactics. The study of this topic involves practical work in the classroom (to master the technique of perimetry, tonometry according to Maklakov, gonioscopy, ophthalmoscopy) to evaluate the results. In the form of a role-play to provide emergency care in an acute attack of glaucoma. The use of virtual simulation - viewing a color atlas with glaucomatous changes of the optic disc, characteristic of each stage of the disease.

Topic 10. Diseases of the optic nerve.

pr.tr.10 "Diseases of the optic nerve." (full-time course)

Optic neuritis: etiology, clinical classification, clinic, topical diagnosis, differential diagnosis and treatment from the standpoint of evidence-based medicine. Features of the clinical course of toxic neuritis, emergency care. Optic nerve atrophy: etiology, types, clinical manifestations, differential diagnosis and treatment from the standpoint of evidence-based medicine. The study of this topic involves solving situational problems with further analysis of clinical symptoms, diagnosis using modern functional and objective research methods, formulation of clinical diagnosis, determination of treatment tactics and route of the patient.

Topic 11. Diseases of the lens. Pathology of the vitreous.

pr.tr.11 "Diseases of the lens.Pathology of the vitreous." (full-time course)

Cataract: definition, etiopathogenesis of age-related and congenital cataracts, classification, clinic, diagnostic methods, complications of age-related cataracts, principles of treatment from the standpoint of evidence-based medicine. Features of cataracts of toxic, radiation, at the general and inherited diseases. Aphakia: its symptoms and methods of correction. Pathogenetic mechanisms of intraocular hemorrhage; the role of imbalance of the pro- and anticoagulant blood system.Classification of hemophthalmos, clinical manifestations; methods of diagnosis and choice of treatment tactics, depending on the severity. Role games. The use of virtual simulation (watching movies about modern methods of cataract surgery - phacoemulsification with implantation of an intraocular lens).

Topic 12. Disease of the choroid.

pr.tr.12 "Disease of the choroid." (full-time course)

Uveitis: etiology, pathogenesis, classification, clinic, complications, principles of treatment from the standpoint of evidence-based medicine. Differential diagnosis of iridocyclitis and acute conjunctivitis and acute glaucoma. Features of uveitis in children. The study of this topic involves theoretical work in the classroom (appointment of a plan of laboratory methods of examination of a patient with uveitis; emergency care for iridocyclitis).

Topic 13. Diseases of the retina.

pr.tr.13 "Diseases of the retina." (full-time course)

Etiology, clinic, diagnostic methods, differential diagnosis and treatment of acute circulatory disorders in retinal vessels (thrombosis, embolism). Age-related macular degeneration, etiology, pathogenesis, clinical forms, diagnostic methods, principles of treatment from the standpoint of evidence-based medicine. Classification of retinal detachments and their clinical manifestations and diagnostic criteria. Primary retinal detachment: etiopathogenesis, clinic, modern methods of treatment. Differential diagnosis of primary and secondary exfoliation. Prevention of blindness due to vascular pathology of the visual organ. The study of this topic involves theoretical work in the classroom in the form of a role play (analysis of clinical symptoms, examination of patients with acute retinal circulatory disorders (thrombosis, embolism) using modern functional and objective research methods, formulate clinical diagnosis, determine treatment tactics and route of the patient), to evaluate additional laboratory and functional methods of examination (coagulogram, lipoprotein composition of blood, ultrasound of internal carotid vessels and their branches).

Topic 14. Eye pathology in general diseases.

pr.tr.14 "Eye pathology in general diseases." (full-time course)

Pathogenetic mechanisms of damage to the visual system in diabetes mellitus and endocrine ophthalmopathy, hypertension, atherosclerosis. Clinical manifestations of diabetic damage to the visual system, complications, principles of treatment from the standpoint of evidence-based medicine, prognosis. Endocrine ophthalmopathy: classification, clinical manifestations, modern methods of diagnosis and treatment of endocrine ophthalmopathy. Methods of research in focal light, in transmitted light, ophthalmoscopy in order to identify changes in various structures of the eye and to interpret them, drawing up a treatment plan.

Topic 15. Eye's tumors.

<p>pr.tr.15 "Eye's tumors." (full-time course)</p> <p>Etiology, pathogenesis, clinical manifestations, methods of diagnosis and treatment from the standpoint of evidence-based medicine of benign and malignant tumors of the eye and adnexa in adults and children. Prevention of blindness. Working in the classroom, watching movies.</p>
<p>Topic 16. Damage to the organ of vision.</p>
<p>pr.tr.16 "Damage to the organ of vision." (full-time course)</p> <p>Classification of eye injuries. Absolute and relative signs of penetrating eyeball injuries. Methods of diagnosis of intraocular foreign bodies. Purulent complications of penetrating eye injuries (endo-, panophthalmitis): clinic, principles of treatment, prevention. Sympathetic inflammation: etiopathogenesis, prevention. The main manifestations of eye contusions (hyphema, hemophthalmos, subconjunctival scleral rupture, traumatic mydriasis, iridodialysis, dislocations and subdislocations of the lens, ruptures of the choroid, retinal detachment) and treatment tactics in them. The study of this topic involves the use of virtual simulation (watching a movie with the method of determining the location of intraocular foreign bodies according to Comberg-Baltin), practical work in the classroom (master the technique of washing the conjunctival cavity, removal of superficial foreign bodies).</p>
<p>Topic 17. Burns of the visual organ. Emergency care.</p>
<p>pr.tr.17 "Burns of the visual organ. Emergency care." (full-time course)</p> <p>Classification of eye burns (by origin, by degree), stage, clinic, diagnostic methods, possible complications, principles of first aid. Electroophthalmia: causes, clinic, treatment tactics. The study of this topic involves the use of virtual simulation (watching a movie with modern methods of treatment of corneal burns 3-4 centuries), practical work in the classroom (to master the technique of washing the conjunctival cavity).</p>
<p>Topic 18. Final control class: differential credit.</p>
<p>pr.tr.18 "Final control class: differential credit." (full-time course)</p> <p>Final control class: differential credit.</p>

7.2 Learning activities

LA1	Preparation for practical classes
LA2	E-learning in systems (Zoom, MIX.sumdu.edu.ua and in YouTube channel)
LA3	Discussion of cases
LA4	Execution of practical tasks
LA5	Work with textbooks and relevant information sources
LA6	Watching movies on the topic
LA7	Solving situational tasks
LA8	Participation in the discussion (group and pair)
LA9	Self-training
LA10	Individual research project (student research work, article, thesis, etc.)

8. Teaching methods

Course involves learning through:

TM1	Interactive lectures
TM2	Team-based learning (TBL).
TM3	Research-based learning (RBL).
TM4	Case-based learning (CBL)
TM5	Role play
TM6	Brain storm.
TM7	Method of illustrations

The discipline is taught using modern teaching methods (CBL, TBL, RBL), which not only promote the development of professional skills, but also stimulate creative and scientific activities and are aimed at training practice-oriented professionals.

Practical classes allow students to plan the scheme of examination of the patient and interpret research results. Diagnose to provide emergency care in emergencies, master the rules of work of senior medical staff in the relevant departments of the hospital, conducting medical manipulations and their practice under the supervision of a teacher. Implementation situational tasks will analyze the tactics of examination of patients. Practical demonstrations provide interpretation of laboratory, radiological, instrumental, microbiological research methods, and emergency care. In preparation for presentations based on the results of practice-oriented learning, students will develop skills independent learning, synthesis, and analytical thinking. Independent work will facilitate preparation for practical classes.

9. Methods and criteria for assessment

9.1. Assessment criteria

ECTS	Definition	National scale	Rating scale
	Outstanding performance without errors	5 (Excellent)	$170 \leq RD \leq 200$
	Above the average standard but with minor errors	4 (Good)	$140 \leq RD < 169$
	Fair but with significant shortcomings	3 (Satisfactory)	$120 \leq RD < 139$
	Fail – some more work required before the credit can be awarded	2 (Fail)	$0 \leq RD < 119$

9.2 Formative assessment

FA1	Peer assessment
FA2	Testing
FA3	Teacher's instructions in the process of performing practical tasks
FA4	Interviews and oral comments of the teacher on his results
FA5	Checking and evaluating written assignments

FA6	Solving clinical cases
FA7	Defence of an individual research project (speech at the conference)

9.3 Summative assessment

SA1	Survey on the topic of practical class, solving clinical cases and situational tasks
SA2	Testing
SA3	Final control: differential credit
SA4	Defence of an individual research project (incentive activities, extra points)

Form of assessment:

7 semester		200 scores
SA1. Survey on the topic of practical class, solving clinical cases and situational tasks		80
		80
SA2. Testing		40
		40
SA3. Final control: differential credit		80
	Final control includes testing of theoretical knowledge - 30 points, solving a clinical case - 20 points, computer testing -10 points and demonstration of practical skills - 20 points.	80
8 semester		200 scores
SA1. Survey on the topic of practical class, solving clinical cases and situational tasks		80
		80
SA2. Testing		40
		40
SA3. Final control: differential credit		80
	Final control includes testing of theoretical knowledge - 30 points, solving a clinical case - 20 points, computer testing -10 points and demonstration of practical skills - 20 points.	80

Form of assessment (special cases):

7 semester		200 scores
SA1. Survey on the topic of practical class, solving clinical cases and situational tasks		80
	In case of quarantine restrictions, survey on the topic of practical class, solving clinical cases and situational tasks are held at remote mode using Mix.sumdu.edu.ua platform, Zoom, Google meet.	80
SA2. Testing		40

	In case of quarantine restrictions, testing is conducted in remote mode using Mix.sumdu.edu.ua platform, Zoom, Google meet.	40
SA3. Final control: differential credit		80
	In case of quarantine restrictions, the final control is a platform of remote mode using Mix.sumdu.edu.ua, Zoom, Google meet. and includes testing of theoretical knowledge - 30 points, solving a clinical case - 20 points, computer testing - 10 points and demonstration of practical skills - 20 points.	80
8 semester		200 scores
SA1. Survey on the topic of practical class, solving clinical cases and situational tasks		80
	In case of quarantine restrictions, survey on the topic of practical class, solving clinical cases and situational tasks are held at remote mode using Mix.sumdu.edu.ua platform, Zoom, Google meet.	80
SA2. Testing		40
	In case of quarantine restrictions, testing is conducted in remote mode using Mix.sumdu.edu.ua platform, Zoom, Google meet.	40
SA3. Final control: differential credit		80
	In case of quarantine restrictions, the final control is a platform of remote mode using Mix.sumdu.edu.ua, Zoom, Google meet. and includes testing of theoretical knowledge - 30 points, solving a clinical case - 20 points, computer testing - 10 points and demonstration of practical skills - 20 points.	80

During the course, a student is awarded a maximum of 5 points for each practical class (the grade is set in the traditional 4-point grading system). The maximum number of points for the current educational activities of the student – 120 points (survey on the topic of the practical class, solving clinical cases and situational tasks – 80 points, testing – 40 points). A student is admitted to the module if he has fulfilled the conditions of the curriculum and if for the current educational activity he scored at least 72 points. The final module control is carried out according to the schedule at the last class. The final module control includes testing of theoretical knowledge - 30 points, solving a clinical case - 20 points, computer testing -10 points and demonstration of practical skills - 20 points. The credit is credited to the student if he scored at least 48 points out of 80. Additional points are added to the grade for the discipline for the implementation of an individual research project (defense of an individual research project – 12 points, speech at the conference – 5 points, poster report at the conference – 4 points, thesis work – 3 points). The total score in the discipline may not exceed 200 points.

10. Learning resources

10.1 Material and technical support

MTS1	Information and communication systems
MTS2	Library funds, archive of fundus pictures, tables of computer perimeters, optical coherence tomograms, results of laboratory methods of inspection

MTS3	Medical equipment (Sivtsev's, Orlova's table, Rabkin's table, Maklakov's tonometer, Forster's perimeter, the ophthalmoscope direct and return, a set of ophthalmic lenses, a frame, Schirmer's test strips, a slit lamp.
MTS4	University Clinic
MTS5	Multimedia, video and sound reproduction, projection equipment (video cameras, projectors, laptop screens)
MTS6	Computers, computer systems and networks
MTS7	Software (to support distance learning: training materials "Lectur.ED", training platform "MIX")

10.2 Information and methodical support

Essential Reading	
1	Practical Ophthalmology : study guide / S. E. Lekishvili. –Sumy : Sumy State University, 2019. – 392.
2	Ophthalmology: textbook / O.P. Vitovska, P.A. Bezditko, I.M. Bezkorovayna et al. — 2nd edition Kyiv. AUS Medicine Publishing. 2020. – P. 648.
3	John F. Salmon. Kanski’s Clinical Ophtalmology. A Systematic Approach. Ninth Edition // London. – 2020.- 925.
Supplemental Reading	
1	American Academy Of Ophthalmology. BCSC 2019-2020. External Disease and Cornea. 2019. - P. 549.
2	American Academy Of Ophthalmology. BCSC 2019-2020. Uveitis and Ocular Inflammation. - 2019. - P. 399.
3	American Academy Of Ophthalmology. BCSC 2019-2020. Retina and Vitreous.2019.- P. 485.
4	EGS Terminology and Guidelines for Glaucoma 5th Ed. 2021. - P.163.
5	Atlas of Operative Craniofacial Surgery. 1st Edition John Mesa, Steven R. Buchman, Donald R. Mackay, Joseph E. Losee, Robert J. Havlik, 2019. - P. 555.
Web-based and electronic resources	
1	https://www.med.unc.edu/opth/for-patients/eye-diseases-and-disorders/
2	https://www.es CRS.org/
3	https://glaucoma.uk/