Ministry of Health of Ukraine
Poltava State Medical University
Department of Otorhinolaryngology and Ophthalmology

# SYLLABUS

**«Ophthalmology»**

(name of the discipline)

(name of the discipline)

**normative**

(normative discipline/ selective)

| | |
|---|---|
| level of higher education | the second (master's) level of higher education |
| branch of knowledge | 22 "Health" |
| Specialty | 222 "Medicine" |
| educational qualification | master of medicine |
| professional qualification | doctor |
| educational and professional program | "Medicine" |
| form of education | daily |

Poltava – 2024

**INFORMATION ABOUT TEACHERS WHO TEACH THE COURSE OF OPHTHALMOLOGY**

| | |
|---|---|
| Surname, name, patronymic of the teacher (teachers), scientific degree, academic title | Bezkorovaina I.M. MD, Professor<br>Voskresenska L.K. MD, Professor<br>Ryadnova V.V. PhD, Associate Professor<br>Pera-Vasylchenko A.V. PhD, Associate Professor<br>Olefir I.S. PhD, assistant<br>Bezega N.M. assistant |
| Profile of teacher (s) | https://www.pdmu.edu.ua/fakultets/stomat/kafedry/otorun-oftalm/ophthalmology/workers |
| Contact phone | (0532)656980 |
| E-mail: | ophthalmology.poltava@gmail.com |
| Page of the department on the PSMU website | https://www.pdmu.edu.ua/fakultets/stomat/kafedry/otorun-oftalm/ophthalmology |

**MAIN CHARACTERISTICS OF THE COURSE**

The scope of the discipline

Number of credits / hours __3 / 90 _____ of them:

Lectures (hours) __6_____

Practical (seminars) (hours) __34_____

Independent work (h). ___50_____

Type of control __PMC _____

**Course policy**

An important condition for a successful educational process is the personal observance by each student of the University of the rules of conduct adopted by the University and in society. The student of the University, as a future doctor, must have a high level of culture and behavior, behave with dignity, tact, maintain endurance and self-control. The student must arrive on time for classes without delay, must be dressed in an appropriate medical uniform (white coat or surgical suit, change of shoes and medical cap). The student must not violate the schedule of

the educational process, come to classes with a synopsis and prepared on the topic of the lesson, not to allow non-compliance with the curriculum and individual curriculum without good reason. A student who has missed classes without a valid reason is obliged to apply to the dean's office for a rework permit within three days of attending classes. During the lesson, the student must not leave the classroom without the permission of the teacher; use mobile phones and other means of communication and information without the teacher's permission, engage in extraneous activities, distract other students and interfere with the teacher.

When organizing the educational process in PSMU students and teachers act in accordance with provisions:

For detailed provisions it is possible on the link: **(https://www.pdmu.edu.ua/n-process/department-npr/normativni-dokumenti**).

**Description of the discipline (abstract)**

Ophthalmology is a branch of medical knowledge, a clinical discipline that studies the anatomy, physiology and pathology of the visual organ and adjacent areas. The importance and necessity of its teaching in the training of physicians are due to the fact that diseases of the visual organ are in one of the first places among human diseases. The organ of vision is connected by many anatomical and physiological mechanisms both with the body as a whole and with its individual organs and systems. Therefore, it is often involved in general diseases of the body or the first to respond to them with functional or morphological changes. In fact, all pathology of the visual organ (except for injuries, some exogenous inflammation of the eyelids, conjunctiva and cornea) is a manifestation of general or systemic diseases. Therefore, knowledge of ophthalmic symptoms in various common diseases is necessary for doctors of all specialties to diagnose, assess the stage, dynamics, determine the prognosis of the underlying disease.

The study of the discipline is carried out in the 4th year of study.

The subject of study of the discipline: is the study of diseases of the visual organ and its appendages, methods of examination, treatment and prevention of eye pathology.

Prerequisites and postrequisites of the discipline (interdisciplinary links)

**Prerequisites and Postrequisites**

The study of the discipline "Ophthalmology" is based on:

a) the knowledge gained from

- medical and biological physics: interpretation of the general physical and biophysical laws that underlie human life, explanation of the basis of diagnosis and physiotherapeutic (therapeutic) methods used in medical equipment;
- human anatomy: to determine the topographic and anatomical relationships of human organs and systems; interpret gender, age and individual features of the structure of the human body;

- histology, cytology, embryology: to interpret the microscopic structure of various human organs, at different ages, as well as in terms of physiological and reparative regeneration;
- physiology: to analyze the state of sensory processes in ensuring human life; explain the physiological basis of methods for studying the functions of the body and the organ of vision;
- microbiology, virology and immunology: to interpret the biological properties of pathogenic and non-pathogenic microorganisms, viruses and patterns of their interaction with the macroorganism, human population and the environment; to interpret the main mechanisms of formation of the immune response of the human body.

The study of the discipline "Ophthalmology" lays the foundations for the study of students:

- infectious diseases: to identify the main clinical symptoms that form the characteristic syndrome of the most common infectious diseases.
- internal medicine: to examine patients, make a preliminary diagnosis, differential diagnosis, determine methods of treatment of patients with rheumatism, rheumatoid arthritis, hypertension, blood diseases, endocrine pathology, etc.
- epidemiology: to interpret the causes and patterns of the epidemic process, the main regulations in the field of epidemiology.
- occupational diseases: to examine the patient, make a preliminary diagnosis and determine the tactics of management of patients with the most common occupational diseases.
- oncology: to determine the tactics of the examination and management of patients with suspected malignancy.

It involves the integration of teaching with these disciplines and the formation of skills to apply knowledge of ophthalmology in the process of further study and in professional activities.

**The purpose and objectives of the discipline:**

The purpose of studying of the discipline is to master the ethical and deontological foundations of vision protection for people of all ages. Based on the vision, etiology, pathogenesis of diseases, classifications, features of the clinical picture, students master the necessary knowledge and skills, actions, objectives, skills that meet the ultimate goals of the discipline in accordance with the OPP.

The main objectives of the discipline are to establish the theoretical foundations of ophthalmology as a science (terminology, research methods, general clinical symptoms of major eye diseases, principles of diagnosis and treatment, disease prevention) and practice practical research skills, methods of emergency care.

Competences and learning outcomes, the formation of which is facilitated by the discipline "Ophthalmology" (relationship with the normative content of training of higher education, formulated in terms of learning outcomes in the draft Standard). According to the requirements of the draft Standard, the discipline "Ophthalmology" provides students with the acquisition of competencies:

- **Integral**: The ability to solve complex problems and problems in the field of health care in the specialty "Medicine" in professional activities or in the learning process, which involves research or innovation and is characterized by uncertainty of conditions and requirements.

**- General**:

1. The ability to abstract thinking, analysis and synthesis; Ability to learn and be modernly trained.
2. Knowledge and understanding of the subject area and understanding of the profession.
3. Ability to apply knowledge in practical situations.
4. Ability to communicate in the state language both orally and in writing. Ability to communicate in another language.
5. Ability to search, process and analyze information from various sources.
6. Ability to adapt and act in a new situation; ability to work autonomously.
7. Ability to identify, pose and solve problems.
8. Ability to choose a communication strategy.
9. Ability to work in a team.
10. Interpersonal skills.
11. Ability to act on the basis of ethical considerations (motives).
12. Safe activities, skills.
13. Ability to evaluate and ensure the quality of work performed.
14. The desire to preserve the environment.
15. Ability to act socially responsible and civic consciously.
16. Skills in the use of information and communication technologies

**- Special:**

1. Collection of medical information about the patient's condition.
2. Evaluation of laboratory and instrumentation research results.
3. Diagnosis of emergencies.
4. Performing medical manipulations.
5. Defining tactics and providing emergency medical care.
6. Determining the tactics of sophthalmological patients with somatic pathology.
7. Assessment of the impact of the environment on the health of the population (individual, family, population).
8. Keeping medical records.
9. Processing of state, social and medical information.

**Program learning outcomes, the formation of which is facilitated by the discipline of Ophthalmology**

1. To know the structure and functions of individual organs and systems and the human body as a whole in the norm, with the development of pathological processes, diseases; Be able to use the acquired knowledge in further training and in the practice of the doctor.
2. Collect data on patient complaints, life history (professional history in particular)

in a health care facility and/or at the patient's home, according to the standard survey scheme.

3. Assign and analyze additional (mandatory and optional) examination methods (laboratory, radiological, functional and/or instrumental). Evaluate information for the purpose of differential diagnosis of diseases (according to list 2), using knowledge about the person, his organs and systems, based on the results of laboratory and instrumentation research (according to list 4).
4. Establish a preliminary and clinical diagnosis of the disease (according to list 2) on the basis of leading clinical symptoms or syndromes (according to list 1) by making an informed decision and logical analysis, using the most probable or syndrome diagnosis, laboratory and instrumental examination of the patient, conclusions of differential diagnosis , knowledge of man, his organs and systems, adhering to the relevant ethical and legal norms.
5. To determine the necessary mode of work and rest in the treatment of the disease (according to list 2) in the health care facility, at the patient's home and at the stages of medical evacuation, including in the field, on the basis of a preliminary clinical diagnosis, using knowledge about the person, his organs and systems, adhering to the relevant ethical and legal norms, by making an informed decision according to existing algorithms and standard schemes.
6. Prescribe the necessary medical nutrition in the treatment of the disease (according to list 2), in a health care facility, at the patient's home and at the stages of medical evacuation, including in the field on the basis of a preliminary clinical diagnosis, using knowledge about the person, his organs and systems, adhering to the relevant ethical and legal norms, by making an informed decision according to existing algorithms and standard schemes.
7. To determine the nature of treatment of the disease (conservative, operative) and its principles (according to list 2) in the conditions of the health care institution, at the patient's home and at the stages of medical evacuation, including in the field on the basis of a preliminary clinical diagnosis, using knowledge about the person, his organs and systems, adhering to the relevant ethical and legal norms, by making an informed decision according to existing algorithms and standard schemes.
8. Carry out diagnostics of emergencies and establish a diagnosis (according to list 3) by making an informed decision and assessing a person's condition under any circumstances (at home, on the street, in a health care facility), including in emergency situations, in field conditions, in conditions of lack of information and limited time, using standard methods of physical examination and possible anamnesis, knowledge about a person, his organs and systems, adhering to the relevant ethical and legal norms.

9. Determine the tactics of emergency medical care, under any circumstances, using knowledge about the person, his organs and systems, adhering to the relevant ethical and legal norms, by making an informed decision, based on the diagnosis (list 3) for a limited time using standard schemes.
10. Organize and conduct medical and evacuation measures among the population and servicemen in emergency situations, including in the field, during the detailed stages of medical evacuation, taking into account the existing system of medical and evacuation support.
11. Perform medical manipulations (according to list 5) in a health care facility, at home or at work on the basis of a previous clinical diagnosis and/or indicators of the patient's condition, using knowledge about the person, his organs and systems, adhering to relevant ethical and legal norms, by making an informed decision and using standard techniques.
12. Assess the general condition of the pregnant woman, parturient and parturient in the health care facility on the basis of anamnestic data, general examination, bimanual, external and internal obstetric examination. Determine the tactics of physiological pregnancy, physiological childbirth and the postpartum period. Consult on family planning and contraceptive selection based on anamnestic data, general examination and gynecological examination of the woman, using knowledge of the woman's reproductive organs, adhering to the relevant ethical and legal norms.
13. Implement a system of anti-epidemic and preventive measures, including primary prevention measures in the health care facility and beyond, on the basis of data on the health of the population served, the presence of environmental impact, the determinant of health using existing methods, within the framework of primary health care. Organize secondary and tertiary prevention measures among the assigned contingent of the population, using a generalized procedure for assessing human health (screening, preventive medical examination, seeking medical care).
14. Plan and implement preventive and anti-epidemic measures to prevent the spread of infectious diseases (according to list 2) in a health care facility based on the results of epidemiological surveys of infectious diseases, epidemiological analysis, using existing preventive and anti-epidemic methods. Identify in the health care facility, using statistical and laboratory methods of risk group, risk areas, time of risk, risk factors and carry out epidemiological analysis of infectious diseases of the population. Diagnose infectious diseases in the early stages (according to list 2), carry out primary anti-epidemic measures in the center of infectious diseases.
15. To determine the tactics of management of persons subject to dispensary

supervision in a health care institution or at the patient's home on the basis of the obtained data on the patient's state of health, using standard schemes, using knowledge about the person, his organs and systems, and legal norms, by making an informed decision.

16. Carry out examination of working capacity by determining the presence and degree of disability, type, degree and duration of incapacity with the relevant documents in a health care facility on the basis of data on the disease and its course, features of professional activity

**Learning outcomes for the discipline:**

upon completion of the study, students must

**- know**:

- general issues of organization of ophthalmological care;
- reasons for the development of pathological processes;
- features of clinical symptoms of the main diseases of the organ of vision;
- tactics of emergency care and modern principles of treatment of patients with various pathologies.

**- be able to:**

- make a preliminary diagnosis of common eye diseases and injuries;
- provide first aid;
- decide on the next medical care;
- to clarify the connection of the pathological process in the patient's body with the disease of vision, and to identify and provide medical proposals;

**Thematic plan of the lectures**

| № | **Name of the topic** | Number of hours |
|---|---|---|
| | **Module 1 "Ophthalmology"** | |
| 1 | Diagnosis and emergency care, prevention of inflammation of the eyelids, lacrimal organs and orbit (barley, eyelid abscess, dacryocystitis, periostitis, phlegmon of the orbit). Diagnosis of inflammation of the conjunctiva and membranes of the eye ("red eye" - conjunctivitis, keratitis, iridocyclitis, uveitis, retinitis, endophthalmitis, panophthalmitis). Diagnosis and treatment. Prevention.<br><br>- Anatomical and physiological features of the structure, conjunctiva, cornea, vascular membrane.<br>- Methods of examination of eyelids, lacrimal organs, orbits of the conjunctiva, cornea, vascular membrane.<br>- Inflammatory diseases of the eyelids: barley, cholazion, blepharitis. Clinic, diagnosis, treatment.<br>- Inflammatory diseases of the sciatic organs: dacryocystitis, dacryodenitis. Methods of treatment in newborns and adults. | 2 |

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| | - Perestitis and phlegmon of the orbit6 clinic, diagnosis, treatment.<br>- Inflammatory diseases of the conjunctiva: conjunctivitis. Etiology, clinic, diagnosis, treatment.<br>- Inflammatory diseases of the cornea: keratitis. Etiology, clinic, diagnosis, treatment.<br>- Inflammatory diseases of the choroid: anterior and posterior uveitis, panophthalmitis. Etiology, clinic, diagnosis, treatment.<br>- Endophthalmitis. Diagnosis, treatment, prevention. | |
| 2 | Gradual decrease in vision (1): Presbyopia. Cataract: congenital, acquired (traumatic, complicated, secondary, senile). Glaucoma. Diagnosis, treatment, prevention.<br>- Anatomical and physiological features of the structure of the lens, optic nerve, drainage system of the eye, retina.<br>- Methods of research of the lens, optic nerve, drainage system of the eye, retina.<br>- Presbiopia. Clinic. Correction.<br>- Congenital and acquired cataracts. Etiology, clinic, diagnosis, treatment.<br>- Glaucoma: diagnosis, treatment, prevention.<br>- Macular degeneration. Etiology, clinic, diagnosis, treatment.<br>- Optic nerve atrophy. | 2 |
| 3 | Damage to the organ of vision and the additional apparatus of the eye. Emergency aid. Prevention, medical examination.<br>- Classification of injuries of the visual organ.<br>- Mechanical injuries of the eye and its appendages. Clinic, diagnosis, treatment.<br>- Emergency care for eye injuries.<br>- Penetrating eye injuries, Clinic, diagnosis, treatment.<br>- Emergency care for eye injuries.<br>- Burns. Classification, clinic, diagnosis, treatment.<br>- Emergency care for burns of the visual organ.<br>- Prevention of eye injuries. | 2 |
| | **Total** | 6 |

## Thematic plan of practical classes (by modules and content modules)

| **Content of module 1. Anatomical and functional features of the visual organ.** | | |
|---|---|---|
| № | Topic | Number of hours |

| | | |
|---|---|---|
| 1 | **Anatomy and topographic features of the organ of vision. Functions of the organ of vision.**<br>1. Anatomy of the retina and visual pathways.<br>2. Study of normal visual acuity.<br>3. Methods of studying central vision.<br>4. Theories of color vision.<br>5. Methods of determining color vision, types of color perception disorders.<br>6. The concept of visual field and types of peripheral visual impairment<br>7. Methods of determining the field of view, normal boundaries for white and chromatic colors.<br>8. The concept of light perception, the theory of light perception.<br>9. Definitions and types of adaptation.<br>10. Methods for determining dark adaptation, types of disorders and their treatment. | 2 |
| 2 | **Refraction**<br>1. The concept of refraction. Physical refraction.<br>2. Units of measurement of power of optical lenses.<br>3. Characteristics of different types of clinical refraction.<br>4. The course of rays in the emmetropic eye.<br>5. The course of rays in the myopic eye, the principles correction.<br>6. The course of rays in the hyperopic eye, principles correction.<br>7. Methods for determining refraction (subjective and objective).<br>8. Astigmatism, principles of correction.<br>9. The concept of anisometropia, principles of correction. | 2 |
| 3 | **Accommodation**<br>1. The concept of accommodation mechanism.<br>2. Characteristics of presbyopia.<br>3. Methods of correction of presbyopia. | 2 |
| 4 | **Binocular vision. Strabismus.**<br>1. The main conditions of binocular vision. The importance of binocular vision in choosing a profession.<br>2. Common strabismus, diagnosis, types.<br>3. Hidden strabismus, clinic, diagnosis.<br>4. Imaginary strabismus, clinical diagnosis.<br>5. Principles of treatment of common strabismus.<br>6. Paralytic strabismus, its symptoms, differential diagnosis, treatment methods | 2 |

| Content of module 2. Inflammatory and dystrophic diseases of the visual organ. | | |
|---|---|---|
| 5 | **Diseases of the eyelids and orbit**<br>1. Anatomical and physiological features of the structure of the eyelids.<br>2. Methods of eyelid examination (simple inversion, examination of the edge of the eyelids).<br>3. Inflammatory diseases of the eyelids, methods of treatment.<br>4. Allergic diseases of the eyelids.<br>5. Dystrophic diseases of the eyelids.<br>6. Diseases of the neuromuscular system.<br>7. Anatomical and physiological features of the structure of the orbit.<br>8. Methods of research of diseases of an orbit.<br>9. Clinic, diagnosis and principles of treatment of diseases of the orbit. | 2 |
| 6 | **Diseases of the lacrimal organs**<br>1. Anatomical and physiological features of the structure of the lacrimal apparatus.<br>2. Methods of research of the lacrimal apparatus, color tests.<br>3. Clinic, diagnosis and treatment of acute and chronic dacryocystitis.<br>4. Features of treatment of dacryocystitis of newborns.<br>5. Dacryoadenitis: clinic, diagnosis, treatment. | 2 |
| 7 | **Conjunctiva disease.**<br>1. Anatomical and physiological features of the structure of the conjunctiva.<br>2. Name the methods of research of the conjunctiva.<br>3. Describe how to take a swab from the conjunctiva cavity.<br>4. Describe how to analyze the microflora.<br>5. Symptoms of Koch-Wicks conjunctivitis.<br>6. Varieties of viral conjunctivitis.<br>7. Clinic of diplobacillary conjunctivitis Morax - Axenfeld.<br>8. Etiology, pathogenesis and clinic of trachoma and its classification.<br>9. Complications of trachoma.<br>10. Etiology, pathogenesis and clinic of paratrachoma.<br>11. Clinic of spring conjunctivitis.<br>12. Clinic and pathogenesis of tuberculousis and allergic conjunctivitis. | 2 |

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| | 13. Dystrophies changes of the conjunctiva (pterygium, pingvekula).<br>14. Benign and malignant neoplasms of the conjunctiva.<br>15. Changes in the conjunctiva in case of inflammatory diseases. | |
| 8 | **Diseases of the cornea, sclera.**<br>1. Anatomical and physiological features of the structure of the cornea and sclera<br>2. Methods of research of a cornea and a sclera<br>3. Describe how to check the sensitivity of the cornea<br>4. Describe the corneal syndrome<br>5. Varieties of corneal anomalies in shape and size<br>6. Keratitis of exogenous etiology<br>7. Keratitis of endogenous etiology<br>8. Etiology, pathogenesis and clinic of creeping corneal ulcers<br>9. Complications of creeping corneal ulcers<br>10. Etiology, pathogenesis of keratomycoses<br>11. Describe the etiology and pathogenesis of syphilitic parenchymal keratitis<br>12. Etiology and pathogenesis of tuberculous-allergic keratitis. Clinic, diagnosis, treatment<br>13. Etiopathogenesis of neuroparalytic keratitis<br>14. Clinic of primary herpetic keratitis. Course. Treatment.<br>15. Avitaminosis keratitis. Clinic. Course. Treatment. Prevention.<br>16. Primary corneal dystrophies. Grenouv's degeneration, Fera's spotted dystrophy, Dimmer's lattice dystrophy, Messman, Francois, Schneider's degeneration.<br>17. Anatomical and physiological features of the sclera structure<br>18. Methods of sclera research<br>19. Etiopathogenesis of scleritis, episcleritis. | 2 |
| 9 | **Diseases of the lens.**<br>1. Anatomical and physiological features of the lens.<br>2. Participation of the lens in accommodation.<br>3. Methods of research of the lens and vitreous.<br>4. Classification of lens diseases.<br>5. Classification of cataracts. Stages of development of age-related cataracts.<br>6. The main clinical symptoms and treatment of age-related cataracts.<br>7. Aphakia: signs, methods of correction. | 2 |

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| | 8. Congenital pathologies of the lens. Tactics of an ophthalmologist with congenital cataracts.<br>9. Pathology of the vitreous.<br>10. Hemophthalmos: clinic, diagnosis, treatment of mastic. Modern methods of treatment. | |
| 10 | **Diseases of the choroid.**<br>1. Anatomical and physiological features of the structure of the vascular tract.<br>2. Methods of vascular tract research.<br>3. Clinical signs of fibrinous and serous iridocyclitis.43. Complications and consequences of iridocyclitis.<br>5. Treatment of iridocyclitis.<br>6. Clinical characteristics of choroiditis, its treatment and consequences. | 2 |
| 11 | - **Retinal diseases. Emergencies in ophthalmology (acute obstruction of the central vein of the retina and its branches, embolism of the central retinal artery, retinal detachment, phlegmon of the orbit).**<br>- Anatomical and physiological features of the retina.<br>- Methods of retinal examination.<br>- Classification of retinal diseases.<br>- Acute obstruction of the central vein and retinal artery. Clinic, diagnosis, treatment.<br>- Retinal detachment. Etiology, pathogenesis, treatment.<br>- Retinal pigment dystrophy: causes, clinical signs, diagnosis, treatment.<br>- 7. Phlegmon of the orbit: clinic, diagnosis, treatment. | 2 |
| 12 | **Optic nerve disease. Curation**<br>1. Anatomical and physiological features of the structure of the optic nerve.<br>2. Methods of optic nerve research.<br>3. Classification of diseases of the optic nerve.<br>4. Clinic of optic neuritis.<br>5. Primary atrophies of the optic nerve: etiology, pathogenesis, clinical signs, treatment tactics.<br>6. Secondary optic nerve atrophy: etiology, pathogenesis, differential diagnosis with congestive optic disc.<br>7. Etiology, pathogenesis, ophthalmoscopic picture of congestive optic disc, importance in the diagnosis of diseases of the central nervous system.<br>8. Possible consequences of stagnant optic disc.<br>9. Principles of treatment of primary and secondary atrophies of the optic nerve. | 2 |

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|---|---|---|
| | 10. Treatment of partial optic nerve atrophy. | |
| 13 | **Glaucoma.**<br>1. Anatomical and physiological features of the structure of the angle of the anterior chamber of the eye.<br>2. The mechanism of regulation of IOP.<br>3. Research methods IOP.<br>4. Gonioscopy, types of angles of the anterior chamber.<br>5. Classification of glaucoma.<br>6. Pathogenesis, clinic and treatment of patients with congenital glaucoma.<br>7. Etiology of primary glaucoma.<br>8. Classification of primary glaucoma, its detailed characteristics.<br>9. The volume of necessary researches at patients with glaucoma.<br>10. Principles of conservative glaucoma therapy. | 2 |
| 14 | **Glaucoma.**<br>1. Clinic of acute glaucoma attack, emergency care.<br>2. Methods of surgical treatment of glaucoma patients.<br>3. Prevention of glaucoma.<br>4. Secondary glaucoma. | 2 |
| **Content of module 3. Damage to the organ of vision. Emergencies in ophthalmology.** | | |
| 15 | **Damage to the organ of vision. Emergency cases.**<br>1. Classification of injuries of the visual organ.<br>2. Clinical characteristics of contusions, treatment.<br>3. Classification of burns of severity.<br>4. First aid for burns of various origins.<br>5. Possibilities of conservative therapy and surgical treatment of burns and their consequences.<br>6. Classification and signs of penetrating injuries.<br>7. Clinical symptoms of injuries of the anterior segment of the eye.<br>8. Clinical symptoms of injuries of the posterior part of the eye.<br>9. The volume examination of patients with penetrating injuries. Methods of localization of intraocular foreign bodies.<br>10. Principles of surgical treatment of wounds of the eyeball and eye appendages.<br>11. Complications of penetrating injuries.<br>12. Sympatophthalmia: clinic, treatment, prevention measures. | 2 |
| 16 | **Changes in the organ of vision in common diseases.** | 2 |

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|---|---|---|
| | 1. Forms of the optic disc.<br>2. What is the normal caliber of the vessels of the optic disc.<br>3. The picture of the fundus is normal.<br>4. Changes in the organ of vision in various common diseases.<br>5. Changes in the organ of vision in brain tumors.<br>6. Explain the term "symptom of glasses".<br>7. Retinal changes in diabetes.<br>8. Characteristics of edematous exophthalmos and its treatment.<br>9. Characteristic changes of the fundus in chronic myeloma leukemia and lymphoid leukemia.<br>10. Characteristics, clinic and treatment of toxoplasmosis.<br>11. Clinic and treatment of Behcet's syndrome. | |
| 17 | **Protection of medical history.**<br>Final modular control (control of theoretical training-1, control of practical training -1) | 2 |
| | **Total** | **34** |

## 6. Individual work

| № | Topic | Number of hours |
|---|---|---|
| 1 | Preparation for practical classes - theoretical preparation | 16 |
| 2 | Development of practical skills | 8 |

| | | |
|---|---|---|
| 3 | Writing a medical history from the discipline "Ophthalmology" | 12 |
| 4 | Processing of topics that are not included in the classroom lesson plan (list):<br>- Dystrophic diseases of the retina:<br>1. Anatomical and physiological features of the structure of the retina<br>2. Methods of retinal research<br>3. Classification of dystrophic diseases of the retina<br>4. Congenital dystrophies of the retina<br>5. Acquired dystrophies of the retina<br>- Neoplasm of the organ of vision:<br>1. Classification of neoplasms of the organ of vision<br>2. Methods of research of the accessory organ of vision<br>3. Benign neoplasms of the accessory eye<br>4. Intraocular neoplasms. Classification. Clinic. Diagnosis, Treatment. | 8 |
| 5 | Preparation for PMK | 6 |
| | Total | 50 |

**Individual tasks.**

1. Preparation of scientific student works and reports at scientific student conferences.
2. Participation in professional student competitions in the discipline.
3. Search for literature and conducting specialized research methods during the implementation of research student work.

**The list of territorial questions for preparation of students for the final modular control.**

**Module 1 Ophthalmology**

**Content module 1**

1. Visual analyzer, its significance in the cognition of the outside world.
2. History of ophthalmology development. Founders of domestic ophthalmology. Kyiv School of Ophthalmology.
3. Achievements of modern ophthalmology. Outstanding ophthalmologists: VP Filatov, . J. Merkulov, NO Puchkovskaya, ML Krasnov, MM Krasnov, SM Fedorov.
4. The concept of absolute, professional and social blindness. The main causes of blindness. Prevention of blindness in adults and children.
5. Blindness. Indicator of blindness. Training and employment of the blind (UTOS).
6. Formation of visual images. The role of the cerebral cortex in the act of vision. Theories of the act of sight.
7. The cornea. Its structure, blood supply, properties and functions.
8. Iris. Its structure, blood supply, properties and functions.
9. Eyelid (ciliary) body and choroid. Their structure, functions.

10. Muscles of the iris and ciliary body. Retina, its structure, functions of rods and cones.
11. Anatomy of the optic nerve, features of its structure and topography.
12. Crystal. Its functions, power, properties.
13. Blood supply to the eyeball.
14. The structure of the orbit and its contents.
15. Muscles of the eyelids. Their function and innervation.
16. The structure of the conjunctiva. Clinical signs of her normal condition.
17. Anatomy of the lacrimal organs. Methods of research of lacrimal ways.
18. External eye muscles. Their innervation and functions.
19. Twilight vision, its disorders, research methods.
20. Research of visual acuity. Visual acuity formula.
21. Peripheral vision and its research. Types of visual field disorders.
22. Color perception, its disturbances, research methods. Theories of color perception.
23. The main elements of the refractive system of the eye. The concept of diopter.
24. Types of clinical refraction. The role of the external environment in the formation of refraction.
25. Methods for determining refraction (objective and subjective).
26. Correction of ametropia in children.
27. Optical glasses and their applications. Contact lenses and their applications.
28. The volume and length of accommodation, its relationship with refraction. The farthest and closest point of view.
29. Accommodation and its age changes. Presbyopia.
30. Hyperopia, its clinic, diagnosis and correction.
31. Myopia, its clinic, causes of development.
32. Complications of myopia. Prevention of myopia progression.
33. Astigmatism, its types and correction.

**Content module 2**

35. Anomalies of eyelid position (entropion, ectropion, ptosis, lagophthalmos). Causes of their occurrence, clinic, methods of treatment.
36. Inflammatory diseases of the eyelids, barley, chalazion. Clinic, treatment.
37. Blepharitis, their clinic and treatment
38. Chronic dacryocystitis, its etiology, clinic, treatment.
39. Phlegmonous dacryocystitis, clinic and treatment.
40. Infant dacryocystitis, clinic and treatment.
41. Inflammatory diseases of the orbit (osteoperiostitis, orbital phlegmon, thrombosis of the cavernous sinus), clinic and treatment.
42. Methods of research of an anterior segment of the eye (focal, bifocal illumination, biomicroscopy).
43. Methods of research of optical environments of an eye.
44. Clinical course and methods of treatment of acute inflammation of the mucous membrane.

45. Clinical manifestations, etiology and methods of treatment of chronic conjunctivitis.
46. Gonoblenorrhea in infants and adults. Prevention.
47. Adenoviral conjunctivitis. Their clinic and treatment.
48. Diphtheria of the eye. Her clinic, diagnosis, treatment.
49. Differential diagnosis of follicular lesions of the conjunctiva (trachoma, folliculitis, follicular conjunctivitis).
50. General principles of trachoma treatment.
51. Stages of trachoma, their clinic. Public and personal prevention of trachoma.
52. Complications of trachoma from the eyelids and cornea.
53. Classification of keratitis. General principles of their treatment.
54. Clinic and consequences of keratitis.
55. Creeping corneal ulcer. Its clinic and treatment.
56. Parenchymal keratitis. His clinic and treatment.
57. Herpetic keratitis. Their diagnosis and treatment.
58. Serous iridocyclitis. Its clinical features, course, diagnosis, treatment.
59. Clinical signs of fibrinous iridocyclitis, etiology, pathogenesis, methods of treatment.
60. Complications and consequences of iridocyclitis.
61. Treatment of iridocyclitis. Pupil dilators. Indications and contraindications to their use.
62. Ways of outflow of intraocular fluid.
63. Dynamic classification of glaucoma.
64. Methods of early diagnosis of glaucoma. The value of dispensary examination of glaucoma patients.
65. Clinical forms of primary glaucoma, treatment.
66. Differential diagnosis of primary glaucoma and cataracts.
67. Acute attack of glaucoma, its clinic. Differential diagnosis with iridocyclitis.
68. Emergency care for acute glaucoma.
69. Secondary glaucoma, its causes, clinic, treatment.
70. Congenital glaucoma, its causes, clinic and treatment.
71. Anomalies of the lens position, diagnosis, complications, treatment.
72. Congenital cataract. Clinic, diagnosis, treatment methods.
73. Stages of senile cataract development. Diagnosis and treatment.
74. Diagnosis and conservative treatment of the initial stage of senile cataract.
75. Traumatic cataract. Features of its course, complications, surgical treatment.
76. Complicated cataract, its causes, clinic, treatment.
77. Secondary cataract, its clinic, causes, surgical treatment.
78. Aphakia, its signs, correction.

## Content module 3

79. The main conditions of binocular vision. The importance of binocular vision in choosing a profession.
80. Allied strabismus, diagnostics, types.
81. Hidden strabismus, clinic, diagnosis.

82. Imaginary strabismus, clinic, diagnosis.
83. Principles of treatment of common strabismus.
84. Paralytic strabismus, its signs, differential diagnosis, methods of treatment.
85. Signs of penetrating injuries of the eyeball. Emergency care for them.
86. Penetrating eye injuries complicated by the presence of a foreign body. Methods of localization of a foreign body in the eye.
87. Principles of removal of intraocular foreign bodies at penetrating injuries of the eyes.
88. Complications of penetrating injuries.
89. Sympathetic inflammation, its clinic, prophylaxis, treatment.
90. Contusions of the eyeball. Their manifestations and treatment.
91. Foreign bodies of the cornea and emergency care for them.
92. Electroophthalmia. Its clinical manifestations and first aid.
93. Endophthalmitis and panophthalmitis. Their clinic, causes, treatment.
94. Chemical eye burns, clinic, emergency care.
95. Thermal eye burns, clinic, emergency care.
96. Intraocular tumors, clinical course, treatment.
97. Military medical examination for eye diseases.
98. Detection of aggravation and simulation. Control methods for detecting visual acuity.
100. Establishment of a disability group due to visual impairment.
101. Ophthalmoscopy, its types.
102. Picture of a normal fundus.
103. Clinic of optic neuritis. Causes, differential diagnosis with congestive optic disc.
104. Ophthalmoscopic picture congestive optic disc. Its significance in the diagnosis of brain tumors.
105. Changes of the fundus in hypertension
106. Changes in the fundus and diabetes mellitus.
107. Changes of the fundus blood diseases.
108. Changes of the fundus in AIDS.
109. Retinal detachment, etiology, clinic, treatment.
110. Acute disorders of retinal circulation. Causes, clinic, treatment.

**List of practical skills for the final modular control**

1. Determine visual acuity by the subjective method.
2. Determination of clinical refraction subjective method.
3. Determination of clinical refraction objective method.
4. Determine color perception using Rabkin's polychromatic tables
5. Determine the field of view by the control method and using an arc perimeter.
6. Determine the dark adaptation of the approximate method.
7. Kravkov-Purkinje test.
8. Examination and inversion of the eyelids.
9. Research of a cornea by a method of lateral illumination.

10. Examine the sensitivity of the cornea.
11. Palpation to determine the sensitivity of the ciliary body.
12. Palpation to determine intraocular pressure. Maklakov tonometer.
13. Investigation of the lens in transmitted light.
14. Determination of binocular vision. Sokolov's test.
15. Color tear and tubular test.
16. Biomicroscopy.
17. Schirmer's test.
18 Ophthalmoscopy.

***Provide emergency care:***
1. In acute iridocyclitis.
2. With acute conjunctivitis.
3. With a foreign body, the conjunctiva, cornea.
4. In an acute attack of glaucoma.
5. With penetrating wounded eye.
6. With chemical and thermal burns of the eye.

**Form of final control of academic success - PMC.**
**Current and final control system.**

Control measures for assessing the educational activities of students include current and final control of knowledge, skills and abilities students.

Control measures are based on the principles: compliance with standards higher education; use of standardized and unified system diagnostics aimed at applying knowledge; definiteness of criteria evaluation; objectivity and transparency of control technology.

| On a 4-point scale | Assessment in ECTS | Evaluation criteria |
|---|---|---|
| 5 (excellent) | A | The student shows special creative abilities, is able to acquire knowledge independently, without the help of the teacher finds and processes the necessary information, is able to use the acquired knowledge and skills for decision-making in unusual situations, convincingly argues answers, independently reveals own talents and inclinations, possesses not less than 90 % of knowledge from topics both during the survey and all types of control. |
| 4 (good) | B | The student is fluent in the studied amount of material, applies it in practice, freely solves exercises and problems in standardized situations, independently corrects errors, the number of which is insignificant, has no less than 85% of knowledge on the topic both during the survey and all types of control. |

| | | |
|---|---|---|
| 3 (satisfactorily) | D | The student reproduces a significant part of theoretical material, shows knowledge and understanding of the basic provisions with the help of a researcher can analyze educational material, correct errors, among which there are a significant number of signings, has at least 65% knowledge of the topic, and during the survey, and of all kinds control. |
| | E | The applicant has educational material at a level higher than the initial, a significant part of it reproduces on reproductive level. Has at least 60% knowledge of the topic both during the survey and all types of control. |
| 2 (not satisfactorily) | FX | The student has the material at the level of individual fragments that make up a small part of the material, has less than 60% knowledge of the topic as during the survey, and all types of control. |
| | F | The student has the material at the level of elementary recognition and reproduction of individual facts, elements, has less than 60% knowledge of the topic as during surveys, and all types of control. |

**Input control.**

Entrance control is carried out at the beginning of the study of a new discipline in order to determine the readiness of higher education students to master it. The control is carried out with the help of diagnostic tools in academic disciplines, usually test tasks.

Control results are analyzed at the departmental (interdepartmental) meetings, at the meetings of the councils of faculties (institutes) and the central methodical commission together with the teachers who conducted classes in the respective academic discipline, according to the graphological structure of the OP. According to the results of the entrance control, the organization of individual work with applicants for higher education, adjustment of working curricula, etc. is envisaged.

**Current control.**

Current control is carried out by scientific and pedagogical (pedagogical) workers during seminars and practical classes, industrial practice. The main purpose of current control is to provide feedback between the researcher and the graduate in the learning process and the formation of learning motivation of higher education. The information obtained during the current control is used both by the researcher and pedagogical worker - to adjust technologies, methods and teaching aids, and by applicants for higher education - to plan independent work.

Current control can be carried out in the form of oral interviews, solving situational problems, assessment of manipulations, written control, written or program computer testing in practical classes, assessment of performances of higher education students when discussing issues in seminars, discussions, etc. Forms of

current control and evaluation criteria are defined in the work program specifically for each discipline.
The current control is carried out by the scientific – pedagogical worker systematically, during the carrying out of practice and seminar employments, industrial practice, the performance of the concrete kind of works provided by the working curriculum on disciplines.
With the beginning of teaching the discipline scientific - pedagogical (pedagogical) worker must bring to the notice of higher education students the requirements for the current control of knowledge.
The teacher must assess the success of each student in each class on a four-point (traditional) scale, taking into account standardized, generalized criteria for assessing the knowledge of higher education.
Assessment of success is integrated (all types of work of the applicant are evaluated, both in preparation for the lesson and during the lesson) according to the criteria that are communicated to the applicants for higher education at the beginning of the study of the discipline.
The grade is given by the teacher in the "Journal of attendance and student performance" and synchronously in the "Electronic Journal of PSMU" (hereinafter EJ) at the end of the lesson or after checking individual tests (written work, solving typical or situational problems and tests), but not later than 2 calendar days after the lesson (in accordance with the "Regulations on the electronic journal of success").

**Final control.**

The components of the final control are: semester control and final certification of applicants for higher education, which is regulated by the "Regulations on the State certification of applicants for higher education of educational and qualification level specialist in the field of training
" Medicine " in the specialty 7.12010005 " Dentistry " of the Poltava State Medical University".
Final modular control (PMC) - a form of final control, which consists in assessing the master of higher education, educational material in a particular discipline (or part thereof) on the basis of current control and individual tasks performed in the last lesson. Semester PMC is planned in the absence of an exam or test.

**Regulations for PMC.**

PMC is carried out upon completion of the study of the program material of the module in the discipline and is held at the last lesson of the module.
Applicants for higher education who have scored the required minimum number of points during the current control (average grade point average 3.0 and above), do not have missed passes of lectures and practical classes, have mastered the topics for independent work within the module and met all requirements in the academic discipline, which are provided by the working curriculum in the discipline (protection of medical history, positive assessments of the content modules, received permission to compile PMC during the test control).
For PMC, the hours provided in the working curriculum are used. PMC is accepted by scientific and pedagogical workers appointed by the head of the department.

In order to objectively impartial assessment of knowledge of higher education students are involved in the reception of PMC research and teaching staff, departments that have not conducted practical classes in these academic groups in this category of students.
The PMC score is evaluated at points and is not converted into a traditional 4-point score. The maximum number of PMC points is 80 points. The minimum number of PMC points at which the control is considered completed is 50 points. The maximum number of points per module is 200 points (of which up to 120 points for current performance).
The questions (test tasks, situational tasks) that are submitted to the PMC are formulated in such a way that the reference answer of the higher education applicant to each lasts approximately 3-5 minutes. The questions cover the most important sections of the working curriculum, which are sufficiently covered in the literature sources recommended as the main (basic) in the study of the discipline.
Examine tickets for PMC are formed on the issues, which are approved at the meeting of the department. The total number of questions (tasks, situational tasks) in each ticket should not exceed three. The PMC must be asked questions, which are determined for self-study within the module.
In case of violation of the rules of academic integrity by the applicant of higher education (p.2.2.5. Of the Rules of Procedure), the results of the assessment obtained during the preparation of the PMC students are graded "unsatisfactory".
Applicants for higher education who, during the study of the module from which the final control is conducted, had an average score of the current grade from 4.50 to 5.0 are exempted from the PMC and automatic (by agreement) receive a final grade, respectively (to Annex 1), therefore, the presence of the applicant at the PMC is mandatory.
In case of disagreement with the assessment, the specified category of applicants for higher education is PMC according to the general rules.
The obtained points for the module are presented by the researcher in the "Statement of final module control" and the individual curriculum of the student.
Information on students who are not enrolled in PMC, with the exact reason for non-enrollment is also entered in the "Statement of final module control" and individual curricula of students. The reasons for non-enrollment may be the following:
a) The applicant for higher education has unfulfilled absences from classes and (or) lectures, industrial practice. Mark "n/v" (failed) in the column "points for PMC";
b) The applicant of higher education attended all classes (practical, seminar, lecture), but did not score the minimum number of points for the current educational activity and is not allowed to PMC. Mark "n/a" (not allowed) in the column "points for PMC";
c) The higher education student attended all classes, scored points for current educational activities and was admitted to the PMC, but did not appear at the PMC. The mark "n/z" (did not appear) in the column "points for PMC".
The applicant for higher education has the right to compile and re-compile two PMC. In exceptional cases, additional reorganization of the PMC may be carried out with

the personal permission of the rector or the first vice-rector for scientific and pedagogical work.

**PMC rearrangement regulations.**

Permission to rearrange PMC is issued by the dean of the faculty, director of the institute (or his deputy) in the form of "Personal statement of rearrangement of final control" which the student receives in the dean's office under the personal signature upon presentation of individual curriculum and (if necessary) information from the department. Debt elimination (absence of "noob", average grade point average of 3.0 and more). In the case of an organized reorganization of the PMC by a group of applicants for higher education, the general statement is used.

The personal statement of re-assembly of the final modular control (general statement) is filled in by the head of the department or his authorized person in two copies, one of which remains in the department, the other returns to the dean's office by the head of the department (responsible teacher).

Applicants for higher education have the right to retake PMC, until the end of the study of the discipline.

If the applicant for higher education has not passed the PMC, in the discipline, except for the semester control in the form of an examination, he may not be admitted to the semester control in the relevant discipline.

An uncompiled PMC in one discipline is not a ground for not admitting a student of higher education to compile the final semester control in another discipline, except for admission to the final certification.

## 12. Scheme of accrual and distribution of points received by students

**Unified table of correspondence of scores for current performance, scores for PMC, exam, and traditional four-point score**

| Average score for the current progress (A) | Points for current success from the module (A*24) | Points for PMC with module (A*16) | Points for the module and / or exam (A*24+A*16) | ECTS category | By 4-point scale |
|---|---|---|---|---|---|
| 2 | 48 | 32 | 80 | **F** | **2** |
| 2,1 | 50 | 34 | 84 | **FX** | **Not satisfactorily** |
| 2,15 | 52 | 34 | 86 | | |
| 2,2 | 53 | 35 | 88 | | |
| 2,25 | 54 | 36 | 90 | | |
| 2,3 | 55 | 37 | 92 | | |
| 2,35 | 56 | 38 | 94 | | |
| 2,4 | 58 | 38 | 96 | | |

| | | | | | |
|---|---|---|---|---|---|
| 2,45 | 59 | 39 | 98 | | |
| 2,5 | 60 | 40 | 100 | | |
| 2,55 | 61 | 41 | 102 | | |
| 2,6 | 62 | 42 | 104 | | |
| 2,65 | 64 | 42 | 106 | | |
| 2,7 | 65 | 43 | 108 | | |
| 2,75 | 66 | 44 | 110 | | |
| 2,8 | 67 | 45 | 112 | | |
| 2,85 | 68 | 46 | 114 | | |
| 2,9 | 70 | 46 | 116 | | |
| 2,95 | 71 | 47 | 118 | | |
| 3 | 72 | 50* | 122 | **E** | **3 satisfactorily** |
| 3,05 | 73 | 50* | 123 | | |
| 3,1 | 74 | 50 | 124 | | |
| 3,15 | 76 | 50 | 126 | | |
| 3,2 | 77 | 51 | 128 | | |
| 3,25 | 78 | 52 | 130 | **D** | |
| 3,3 | 79 | 53 | 132 | | |
| 3,35 | 80 | 54 | 134 | | |
| 3,4 | 82 | 54 | 136 | | |
| 3,45 | 83 | 55 | 138 | | |
| 3,5 | 84 | 56 | 140 | | |
| 3,55 | 85 | 57 | 142 | | |
| 3,6 | 86 | 58 | 144 | | |
| 3,65 | 88 | 58 | 146 | | |
| 3,7 | 89 | 59 | 148 | | |
| 3,75 | 90 | 60 | 150 | **C** | **4 good** |
| 3,8 | 91 | 61 | 152 | | |
| 3,85 | 92 | 62 | 154 | | |
| 3,9 | 94 | 62 | 156 | | |
| 3,95 | 95 | 63 | 158 | | |
| 4 | 96 | 64 | 160 | | |
| 4,05 | 97 | 65 | 162 | | |
| 4,1 | 98 | 66 | 164 | | |
| 4,15 | 100 | 66 | 166 | | |
| 4,2 | 101 | 67 | 168 | | |
| 4,25 | 102 | 68 | 170 | **B** | |
| 4,3 | 103 | 69 | 172 | | |
| 4,35 | 104 | 70 | 174 | | |
| 4,4 | 106 | 70 | 176 | | |
| 4,45 | 107 | 71 | 178 | | |
| 4,5 | 108 | 72 | 180 | | |
| 4,55 | 109 | 73 | 182 | **A** | **5 excellent** |
| 4,6 | 110 | 74 | 184 | | |
| 4,65 | 112 | 74 | 186 | | |
| 4,7 | 113 | 75 | 188 | | |
| 4,75 | 114 | 76 | 190 | | |
| 4,8 | 115 | 77 | 192 | | |

| | | | |
|---|---|---|---|
| 4,85 | 116 | 78 | 194 |
| 4,9 | 118 | 78 | 196 |
| 4,95 | 119 | 79 | 198 |
| 5 | 120 | 80 | 200 |

**Teaching methods.**
When studying the discipline "Ophthalmology" the following teaching methods are used:

-Verbal: lectures, explanations, story, conversation, instruction
- Visual: illustrations, demonstrations
- Practical: performing practical work and solving situational tasks to develop skills and abilities;
- Independent work of students on comprehension and assimilation of new material
- Use of control and educational computer programs in the discipline;
- Thematic discussions;
- Brainstorming;
- Analysis of specific situations (short method);
- Presentations.

**Control methods:**
• Oral;
• Written;
• Test;
• Programmable.

**Methodical support:**
1. Working curriculum of the discipline;
2. Syllabus;
3. Plans of lectures, practical classes and independent work of students;
4. Methodical developments, theses, texts, multimedia presentations of lectures on discipline;
5. Methodical instructions for independent work of students during preparation for a practical lesson and in class.
6. Methodical instructions for independent work of students on studying about the subjects brought on independent working out.
8 Clinical tasks and 2 practical tasks and evaluation criteria.
7. Methodical recommendations for teachers,
8. Test tasks for self-control in accordance with the topics of practical classes
9. Theoretical questions and practical tasks to control the assimilation of content modules;
10. Materials for the final module control (examination tickets, including 20 test tasks, 8 clinical tasks and 2 practical tasks and evaluation criteria).

11. Demonstration materials, instructions for the use of technical teaching aids (equipment for mastering the theoretical material, educational films, videos).
10. Methodical recommendations for teachers for practical classes according to the thematic plan.

**Recommended literature**

**Basic**
**(available in the PSMU library)**

1.Ophthalmology: National textbook/ O.P. Vitovska P.A. Bezditko, I.M. Bezkorovayana et al.; edited by O.P. Vitovska. – Kyiv: AUS Medicine Publishing, 2017 - 648 c.

2.Ophthalmology: [text]: Manual for foreign students of higher medical educational institutions of the III-IV accreditation levels/ V.V. Ryadnova, I.M. Bezkorovayana, A.V. Pera-Vasylchenko, L.K. Voskresenska. - Poltava: «ASMI», 2018. – 218 s., IL,.

**Auxiliary**

1."Ophthalmology" textbook. Edited by GD Zhaboyedov, RL Skripnik, K.: "Medicine", 2011. - 378p.
2. Therapeutic ophthalmology. Handbook of Ophthalmology. Edited by G.D. Zhaboyedova, Kireev VV: "Health", 2013. - 343p.
3. Ophthalmology. I.M. Bezkorovayana, V.V. Ryadnova, L.K. Voskresenska, Dyvosvit, 2012. - 244 p.
4. Ophthalmology. I.M. Bezkorovayana, V.V. Ryadnova, L.K. Voskresenska, Poltava: «ASMI», 2017. - 215 p.

**Information resources**

www.umsa.edu.ua
www.booksmed.com/oftalmologiya/
medlink.ucoz.ru/dir/66
www.booksgid.com › Профессии
padabum.com › Медицина
knigosite.org/library/books/10569
www.litlib.net/bk/29194
meduniver.com/Medical/Book/95.html –иностр.

Developers: Associate Professor Pera-Vasylchenko A.
Associate Professor Ryadnova V.