

MEDICAL UNIVERSITY – PLOVDIV
FACULTY OF MEDICINE

SYLLABUS

IN

Ophthalmology

Approved by the Department Council on 14.02.2024

Confirmed by the Faculty Council - Protocol № 5/24.04.2024

SYLLABUS

Discipline	Final exam/ semester	Auditorium classes				ECTS non-auditorium classes	ECTS total	Academic hours in years and semesters	
		Total	Lectures	Practices	ECTS			4 ^t year	
Очни болести	VIII							VIII	VIII
		30	15	15	1,8	0	1,8	15	15

DISCIPLINE:

„Ophthalmology”

TYPE OF DISCIPLINE ACCORDING TO THE UNIFORM STATE REQUIREMENTS

Obligatory

LEVEL OF QUALIFICATION:

Master degree /M/

FORMS OF TRAINING:

Lectures, exercises, self-preparation.

YEAR OF TRAINING:

1 semester

DURATION OF TRAINING:

Lectures 15 hours, Practices 15 hours

ADDITIONAL MATERIALS:

Equipped work rooms, manipulation rooms, audio-video techs, multimedia presentations, discussions, demonstration of methods for investigations, diagnostics and treatment.

FORMS OF EVALUATION:

Weekly test, oral exam, summary test.

EVALUATION CRITERIA:

Written exam, oral exam.

ASPECTS OF EVALUATION CRITERIA:

Participation in weekly tests, oral exams, semester exam results

SEMESTRIAL EXAM:

Yes (written and oral exam)

STATE EXAM:

No

LECTURER:

Habilitated lecturer from department of ophthalmology.

Department:

Ophthalmology

ANNOTATION

During the Ophthalmology course the students will become familiar with the main subject of the discipline, the history of the ophthalmology, the anatomy and the primary functions of the eye: light perception, color perception, central and peripheral vision. The students must be able to distinguish the types of refractions and must have knowledge of the diseases of the orbit, the eyelids, the lacrimal system, the conjunctiva, the uvea, the lens. They must be able to differentiate the primary open angle glaucoma from the primary angle closure glaucoma.

Main purpose

To obtain the necessary practical and theoretical skills in the subject.

1. Anatomy and physiology of the eye ball.
2. Eye examination
3. Eye terminology
4. Main eye diseases
5. Emergency condition in the ophthalmology

Theoretical :

1. Anatomy of the eye and eye adnexa.
2. Blood supply of the eye and eye adnexa
3. Connections between the eye and the maxillary bone.
4. Focal infection and the connection with uveitis, neuroretinitis and scleritis.
5. Function of the ciliary body.
6. Management of blunt force trauma to the eye, the eyelids and the bony orbita.
7. Management of perforating trauma to the eye and the eye adnexa.
8. Management of eye burns(chemical and thermal).
9. Management of central retinal arterial occlusion.
10. Management of central retinal vein occlusion.
11. Management of acute angle closure glaucoma.
12. Management of iridocyclitis.
13. Management of eye or adnexal inflammation with dental origin.
14. Management of combined orbital/maxillar trauma.
15. Management of orbital phlegmon with dental origin.

Practical skills:

1. Exposure of the conjunctiva
2. Massage of the lacrimal sac
3. Shirmer test
4. Fluorescein test
5. Examination of the corneal sensitivity
6. Focal illumination
7. Transillumination
8. Ophthalmoscopy
9. Visual acuity testing. Light perception and projection.
10. Visual field testing.
11. Checking the intraocular pressure by palpation.
12. Installing eye drops-methods.
13. Installing ophthalmic ointments-methods.
14. Making an Ocular bandage.
15. Mechanism of irrigation in chemical injuries.
16. Making a hot compress.

L E C T U R E S

Lecture № 1 – 2 hours

SUBJECT OF OPHTHALMOLOGY. ANATOMY, PHYSIOLOGY. LIGHT PERCEPTION. COLOUR VISION. CENTRAL AND PERIPHERAL VISION. REFRACTION.

1. Subject of ophthalmology.
2. History of ophthalmology.
3. Anatomy of the visual analyzer.
 - 3.1. Peripheral part – eyeball and adnexa /eyelids, lacrimal apparatus, conjunctiva, orbit and extraocular muscles/
 - 3.2. Visual nerve pathways – optic nerve, optic chiasma, optic tract, lateral geniculate body, optic radiation.
 - 3.3. Central part - 17,18,19 Brodmann's areas
4. Physiology of light perception, methods for examination, disturbances.
5. Physiology of colour vision, methods for examination, disturbances.
6. Central and peripheral vision – visual acuity, optotypes, Donders' formula
7. Visual field – definition, methods for examination, disturbances.
8. Refraction – physical and clinical. Emmetropia, myopia and hypermetropia.
9. Accommodation – definition, presbyopia.

Lecture № 2 – 2 hours

DISEASES OF THE EYELIDS, LACRIMAL APPARATUS AND CONJUNCTIVA

1. Anatomy of the eyelids.
2. Congenital anomalies of the eyelids - coloboma, epicanthus, blepharophimosis, symblepharon, ablepharia, congenital ptosis.
3. Diseases of the eyelid skin:
 - 3.1. Non inflammatory diseases – edema, haemorrhages, emphysema.
 - 3.2. Inflammatory diseases – viral /herpes simplex, herpes zoster, molluscum contagiosum/; bacterial /furunculus, abscess, anthrax, tuberculosis, syphilis/; mycotic.
4. Diseases of the eyelid margin – blepharitis, hordeolum, chalazion.
5. Changes in eyelid position – ptosis, lagophthalm, blepharospasm, entropium, ectropium.
6. Anatomy of the lacrimal apparatus.
7. Inflammatory diseases of the lacrimal system – dacryoadenitis, canaliculitis, dacryocystitis.
8. Anatomy of the conjunctiva.
9. Differential diagnosis between conjunctival and ciliary injection.
10. Conjunctivitis – acute /catarrhal, gonococcal, nongonococcal, diphtheric/ and chronic /catarrhal, follicular, trachoma/

Lecture № 3 – 2 hours

**DISEASES OF THE FIBROUS TISSUE OF THE EYE.
DISEASES OF THE VASCULAR COAT OF THE EYE.**

1. Anatomy of the sclera.
2. Congenital diseases of the sclera.
3. Episcleritis and scleritis
4. Anatomy of the cornea.
5. Congenital diseases of the cornea.
6. Superficial nonpurulent keratitis – keratitis superficialis, keratoconjunctivitis epidemica, herpes simplex corneae, herpes zoster ophthalmicus, keratoconjunctivitis sicca, keratitis e lagophthalamo.
7. Superficial purulent keratitis – ulcus serpens corneae, keratomycosis, corneal abscess, annular abscess.
8. Deep keratitis – parenchymatous keratitis in congenital syphilis, tuberculous deep keratitis, sclerosing keratitis, disciform keratitis.
9. Anatomy of the uvea – iris, ciliary body, choroid.
 10. Iridocyclitis – etiology, pathogenesis, clinic, treatment
 11. Chorioretinitis – etiology, pathogenesis, clinic, treatment

Lecture № 4 – 2 hours

DISEASES OF THE LENS. GLAUCOMA

1. Anatomy of the lens.
2. Congenital anomalies of the lens.
3. Congenital and hereditary cataracts - types, treatment
4. Acquired cataracts.
 - 4.1. Senile – cortical, nuclear.
 - 4.2. Complicated cataract – in uveitis, myopia, pigment degeneration of the retina
 - 4.3. Pathological cataract – diabetic, tetanic, myotonic, dermatogenic
 - 4.4. Traumatic cataract.

- 4.5.Toxic cataract.
- 4.6.Ray cataract.
- 5.Surgical treatment of cataract – phacoemulsification with implantation of intraocular lens, extra- and intracapsular extraction of cataract.
- 6.Glaucoma – definition, classification
- 7.Open angle glaucoma – clinic, treatment.
- 8.Closed angle glaucoma – clinic, treatment.
- 9.Congenital glaucoma
- 10.Secondary glaucoma

Lecture № 5 – 2 hours

DISEASES OF THE ORBIT.

- 1.Anatomy of the orbit.
- 2.Methods for examination of the orbit.
- 3. Vascular-circulatory diseases of the orbit - edema, haemorrhages, pulsating exophthalm, intermittens exophthalm
- 4.Inflammatory diseases of the orbit:
 - 4.1.Cellulitis, phlegmon.
 - 4.2.Thrombophlebitis.
 - 4.3.Periostitis.
 - 4.4.Orbital pseudotumor.
- 5.Malignant exophthalm /proptosis/.
- 6.Tumors of the orbit – classification, clinic, diagnostics, treatment.
- 7.Parasytosis of the orbit – Phleriosis, echinococcosis, oncoccerosis.
- 8. Traumas of the orbit- diagnostics, clinic, emergency, treatment.

Lecture № 6 – 3 hours

**CONNECTION BETWEEN OCULAR AND DENTAL DISEASES.
OCULAR MANIFESTATIONS IN COMMON DISEASES.**

- 1.Anatomical connections.
- 2.Nerve-reflection connections.
- 3.Фокална инфекция от зъбен произход.
- 4.Ocular manifestations in arterial hypertension.
- 5.Ocular manifestations in diabetes mellitus.

Lecture № 7 – 2 hours

**EMERGENCY IN SEVERE OCULAR DISEASES.
OCULAR TRAUMA.**

- 1.Ocular trauma - classification.
- 2.Injuries of the orbit and the eyeball – diagnostics, clinic. First aid, treatment.

3. Nonperforating injuries of the eyeball – diagnostics, first aid, treatment.
4. Perforating injuries of the eyeball - diagnostics, first aid, treatment.
 - 4.1. Without a presence of a foreign body.
 - 4.2. With a presence of a foreign body.
 - 4.3. Prophylaxis for sympathetic ophthalmia.
5. Eye burns – types, degrees, first aid, treatment.
6. Vascular occlusions – diagnostics, clinic, treatment.
 - 6.1. Acute vascular obstruction of the central retinal artery.
 - 6.2. Anterior ischaemic optic neuropathy.
7. Acute glaucoma attack - diagnostics, clinic, treatment.

PRACTICES

PRACTICES № 1 – 2 hours

Anatomy of the eyeball. Systemic approach for examining patient with eye disease. Methods for examining of the orbit, eyelids, conjunctiva and lacrimal apparatus. Focal illumination.

1. Anatomy of the visual analyzer
2. Systemic approach for examining patient with eye disease
3. Methods for examination of the:
 - a/orbit
 - б/lacrimal apparatus
 - в/eyelids
 - г/conjunctiva
4. Focal illumination

PRACTICES № 2 – 2 hours

Testing of visual acuity, visual field, light perception and colour vision.

1. Visual acuity testing.
 - a/ Theoretical bases
 - б/ Practical testing of visual acuity by the students using the Monoyer's chart.
2. Visual field testing.
 - a/ Theoretical bases
 - б/ Practical testing of the visual field by the students using the control mode and a perimeter.
3. Light perception testing.
4. Colour vision testing.

PRACTICES № 3 – 2 hours

.Objective methods for examining the transparent structures of the eye and the eye fundus: transillumination, ophthalmoscopy. Methods for local treatment of patients with eye diseases. Most common drugs used in ophthalmology – introduction. Diseases of the cornea and lens.

- 1.Objective methods for examining the transparent structures of the eye
 - a/ Principles of transillumination
 - б/ Principles of ophtalmoscopy
 - в/ Examining of the eye fundus and of the transparent structures of the eye by every
- 2.Methods for local treatment of patients with eye - types and advantages of the local treatment: lavage, eye drops, eye ointments, subconjunctival and retrobulbar injections, physiotherapy
- 3.Most common drugs used in ophtalmology
- 4.Examining patients with diseases of the sclera and lens.

PRACTICES № 4 – 2 hours

Examining patients with glaucoma - demonstration. Methods for measuring the intraocular pressure. Diseases of the conjunctiva and the lacrimal system.

Glaucoma

- 1.Examining patients with glaucoma.
- 2.Examining of eye status with demonstration of methods for measuring the intraocular pressure and visual field testing using computer perimetry
 - a/Measuring the intraocular pressure with palpation by every student
 - б/Instrumental examination. Goldmann’s tonometry – demonstration.

Conjunctiva and lacrimal system

- 1.Exposure of the conjunctiva.
- 2.Diseases of the conjunctiva.
- 3.Methods for examination of the lacrimal system.
- 4.Diseases of the lacrimal system.

PRACTICES № 5 – 2 hours

Eyelids and orbit.

- 1.Groups of diseases of the eyelids.
- 2.Comparison between a patient with normal position of the eyelids and patients with ectropium and entropium
- 3.Demonstration of patients with eyelid diseases – blepharitis, hordeolum, trichiasis, ectropium, ptosis.
- 4.Examination of the orbit.
- 5.Diseases of the orbit in relation with paranasal cavities and teeth.

PRACTICES № 6 – 3 hours

Diseases of the uvea and the optic nerve. Focal infection with tooth origin. Ocular trauma. Emergency in ophthalmology. Test.

- 1.Ciliary injection. DD between conjunctival and ciliary injection
2. Examining patients with uveitis.
3. Relations between focal infection with tooth origin – diseases of the uvea

4. Ocular trauma – types, management in perforative traumas and eye burns
5. Management in acute glaucoma attack, iridocyclitis, acute vascular obstruction of central retinal artery and vein

PRACTICES № 7 – 2 hours

Revision

BIBLIOGRAPHY

№	NAME	AURORS	PUBLISHER	YEAR
1.	Ophthalmology	Mark Batterbury, Brad Bowling, Conor Murphy	Churchill Livingstone	2009
2.	Ophthalmology	Gerhard K. Lang	Thieme, Stuttgart-New York	2000
3.	Clinical Ophthalmology	Kanski J.	Butterworth Heinemann UK,	1997
4.	Diabetic Retinopathy	Mohammad Shamsul Ola.	InTech, Rijeka Croatia	2012
5.	Guide in ophthalmology for dental students	Sivkova N. et all.	Medical University, Plovdiv,	2015
6.	Basik and Clinical Science Course	American Academy of Ophthalmology	American Academy of Ophthalmology	2023-2024

**QUESTIONNAIRE FOR THE END EXAM
IN OPHTHALMOLOGY DENTAL STUDENTS**

1. Anatomy of the outer layer of the eyeball – cornea, sclera
2. Anatomia of the middle middle layer of the eyeball – uvea
3. Anatomia of the retina
4. Anatomy of the visual pathways
5. Refraction of the eye. Accomodation
6. Anatomy of the eyelids
7. Anatomy of the lacrimal apparatus
8. Anatomy of the orbit
9. Blood supply and innervation of the orbit
10. Light perception. Adaptation. Hemeralopy
11. Colour vision. Disturbances in colour vision. Methods for examination.
12. Central vision. Examination of visual acuity. Donder's formula
13. Visual field. Methods for examination of the visual field – perimetry. Abnormal changes in the vision field.
14. Focal illumination

15. Ophthalmoscopy
16. Acute and chronic orbital inflammatory diseases.
17. Orbital trauma, tumors and parasitic infections.
18. Inflammatory diseases of the eyelid-skin.
19. Inflammatory diseases of the eyelid margin.
20. Acute and chronic conjunctivitis.
21. Dacryocystitis- clinical presentation ,types of dacryocystitis, treatment.
22. Infectious keratitis-etiology, clinical presentation, treatment.
23. Non- infectious keratitis- etiology, clinical findings, treatment.
24. Iridocyclitis- etiology, clinical presentation , treatment.
25. Chorioretinitis- etiology, clinical presentation , treatment.
26. Senile cataract – clinical findings,, treatment.
27. Primary open -angle glaucoma /POAG/ and primary angle-closure glaucoma /PACG/ - clinical presentation , treatment.
28. Ocular trauma- blunt and penetrating trauma of the globe and soft tissues of the eye.Clinical presentation,treatment.
29. Chemical injures- cause, pathophysiology, management.
30. Primary angle-closure glaucoma, occlusion of the central retinal artery ,central retinal venous occlusive disease-clinical findings, management.
31. Uveal and orbital inflammatory diseases caused by teeth inflammation.
32. Anatomical,vascular and neuro- reflectory connectons between eye and dental diseases.

Questionnaire for the practical exam for dental students

1. Exposure of the conjunctiva
2. Massage of the lachrymal sac
3. Shirmer test
4. Fluorescein test
5. Examination of the corneal sensitivity
6. Focal illumination
7. Transillumination
8. Ophthalmoscopy
9. Visual acuity testing. Light perception and projection.
10. Visual field testing.
11. Checking the intraocular pressure by palpation.
12. Installing eye drops-methods.
13. Installing ophthalmic ointments-methods.
14. Making an Ocular bandage.
15. Mechanism of irrigation in chemical injures.
16. Making a hot compress.