

<b>Study program:</b> Integrated Academic Studies in Medicine
<b>Course title:</b> Ophthalmology
<b>Teacher:</b> Nikola M. Babić, Desanka J. Grković, Vladimir M. Čanadanović, Aleksandar S. Miljković
<b>Course status:</b> compulsory
<b>ECTS Credits:</b> 3
<b>Condition:</b> Pharmacology and Toxicology 1; Pharmacology and Toxicology 2; Neurology; Internal medicine; Paediatrics
<p><b>Course aim</b></p> <p>The aim of this course is to provide medical knowledge of anatomy, vision function and eye diseases; identify most important ophthalmology problems important for vision protection and blindness prevention.</p>
<p><b>Expected outcome of the course:</b></p> <p>Theoretical knowledge on the function of vision, optics and eye refraction, oculomotor balance and its disorders, diseases and injuries of the outer eye (eyelids, lacrimal apparatus, cornea), the inner eye (anterior eye chamber, uvea, retina, papilla, visual nerve), orbital and intracranial pupillomotor fibers and centres, diagnostics, prognosis and medication and surgical treatment of eye diseases and anomalies. Ability to identify the most important eye defects, diseases and injuries that endanger the eye function and vision; to be able to provide appropriate treatment and to refer the patient to the ophthalmologist or surgeon.</p>
<p><b>Course description</b></p> <p><i>Theoretical education</i></p> <p>1. Epidemiology of blindness and visual impairment and the importance and role of vision. Association between eye and general diseases. 2. Eyelids: structure, physiology, skin disorders, vascular disorders, bacterial and viral infections, inflammations and gland disorders, shape, position, mobility, and tumors of the eyelids. Treatment principles. 3. Lacrimal apparatus - anatomy, physiology of tear secretion. Dry and wet eye, inflammation, tumors, diagnosis and treatment. 4. Conjunctiva - anatomy, physiology, types hyperemia, eye inflammations (bacterial, viral, allergic). The differential diagnosis of the red eye. Degenerative diseases and tumors of the conjunctiva. Treatment. 5. Cornea - anatomy and physiology, disorders of the size and curvature. Defects of the cornea, inflammations - bacterial, viral, fungal. Disorders of transparency, edema, scars and degeneration. Corneal surgery. 6. Sclera - function and disorders, inflammations - bacterial, immunologic, degenerative and their prevention and treatment. 7. Front uvea and ciliary body, anatomy, physiology. Anterior and posterior ocular chambers. Front diffuse uveitis. Purulent inflammation of uvea - endophthalmitis and panophthalmitis - diagnosis and treatment. 8. Physiology of intraocular pressure. Aqueous humor secretion and swelling. Primary, secondary, and congenital glaucoma. Closed-angle glaucoma- acute glaucoma. Primary open-angle glaucoma. Diagnosis and treatment. 9. Crystalline lens - embryology, physiology and pathology. Congenital and acquired cataract. Diagnostic surgical treatment and rehabilitation of vision, intraocular artificial lens. 10. Ocular fundus - chorioretinal complex, physiology and function of the retina and choroid. Semiology of changes of the ocular fundus. Diseases of the uvea and rear-choroiditis, chorioretinitis, uvea and retinal tumors, diagnosis and treatment. 11. Retinal diseases - vascular, inflammatory, degenerative. 12. The vitreous body and its disorders. Hemophthalmos. 13. Orbit, vascular, endocrine diseases, purulent inflammations and tumors. Diagnosis and treatment. 14. Optic nerve, visual pathway, diseases of the optic nerve and visual field disorders. Iris and pupillomotor reaction. 15. Refraction of the eye - refractive errors, nearsightedness, farsightedness, astigmatism. Eyeglasses, contact lenses, refractive surgery. 16. Eye motility, oculomotor functions, binocular vision. Disorders of the ocular balance, strabismus, amblyopia, paralytic strabismus. 17. Mechanical, physical and chemical eye and orbital injuries, emergency conditions and principles of diagnosis and treatment. 18. Current therapeutic modalities and surgery in ophthalmology - video presentation.</p> <p><i>Practical education</i></p> <ol style="list-style-type: none"> <li>1. Eyeball- anatomy.</li> <li>2. History taking in ophthalmologic patients. Principal problems, external examination, inspection.</li> <li>3. Vision acuity measurement, near and distance measurement in each eye.</li> <li>4. Eyelids - anatomy, fissures, inspection, palpation, (upper eyelid ectropion).</li> <li>5. Lacrimal apparatus - lacrimal glands, drainage pathways (fluorescein test, Schirmer test, palpation - massage).</li> <li>6. Examination of the conjunctiva, anatomy, types of hyperemia, conjunctival, ciliary.</li> <li>7. Local therapy - drops, ointment, removal of foreign body from the conjunctiva, eye washing.</li> <li>8. Examination of the cornea and sclera, focal illumination, fluorescein test sensitivity.</li> <li>9. Anterior eye chamber (depth and content). Iris – color, structure. Iridocyclitis, ciliary hyperemia. Pupil dilating, reactions to light, direct - indirect.</li> </ol>

10. Biomicroscopy of the anterior eye chamber - demonstration and analysis of physiological properties of tissues, pathological changes, erosion, edema, corneal scars.
11. Digital measurement of the intraocular pressure (IOP), aplanatic tonometry, gonioscopy, visual field. Acute angle-closure glaucoma - a case report.
12. Orbit, cranial nerve palpation. Protrusion – exophthalmos - exophthalmometriy MR, CT.
13. White pupils - leukocoria, cataract - iris shadow, pupil illumination and parallax, aphakia, pseudophakia.
14. Ocular fundus - anatomy, semiology of the retina. Direct ophthalmoscopy, indirect ophthalmoscopy, biomicroscopy of the ocular fundus.
15. Iris dilation, direct ophthalmoscopy, red reflex, parallax.
16. Fluorescein angiography. Eye diseases - ultrasound diagnostics.
17. Functional and diagnostic tests: color vision, vision field - computerized perimetry, adaptation to darkness. Electrophysiological methods (ERG, EMG, EOG).
18. Subjective and objective determination of refraction, vision, various glasses.
19. Eye mobility, the primary position, the visual axis. Detection of strabismus and amblyopia, Hirschberg test, cover test, test for diplopia methods of penalizing (amblyopia).
20. Eye injuries (chemical, mechanical, physical): first aid.
21. Watching eye surgeries on the monitor.

#### Literature

##### Compulsory

1. Kanski JJ. Clinical Ophthalmology. Oxford. Butterworth-Heinemann Ltd, 1994.
2. Khaw PT, Shah P, Elkington AR. ABC of Eyes, Fourth Edition. London. BMJ books, 2004.
3. American Academy of Ophthalmology: Set of books of Ophthalmology:2017.

<b>Number of active classes</b>	<b>Theoretical classes: 30</b>	<b>Practical classes: 30</b>	
<b>Teaching methods:</b> Lecture, practical work, multimedial presentations.			
<b>Student activity assessment (maximally 100 points)</b>			
<b>Pre-exam activities</b>	<b>points</b>	<b>Final exam</b>	<b>points</b>
Lectures	10	Written	20
Practices	20	Oral	30
Colloquium	10	.....	
Essay	10		