Faculty of Medicine **Aswan University**

Course Specifications

Ophthalmology Doctorate Degree – Part One

Eye Anatomy, Physiology, Pathology, Microbiology & Optics and refraction

Code: OPH326A

2020-2021

A- Administrative Information

1- Program title: Doctorate Degree, Physiology, Pathology, Microbiology& Optics and refraction

2- Department offering the program: ophthalmology department

3- Department in charge of the course: ophthalmology department

4- 4- Level: 1st part

5- Credit points: 7 credit hours

Lectures: **6credit hours= 120 taught hours**

Practical: **1credit hours = 40 taught hours**

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B- Professional Information

1 – Intended learning outcomes (ILOs):

By the end of this program the candidate will be able to:

1. Identify the principles of anatomy and embryology topics of the eye and its adnexa.
2. To correlate anatomical facts with their clinical applications to help in different surgical procedures.
3. Identify the basic information about physiology of the human eye.
4. Solve the ophthalmological problems related to the physiology of the eye.
5. Understand the Basic principles of pathology of the eye.
6. Solve the ophthalmological problems related to the Pathology of the eye and know how to find the solution
7. Identify the basic information about Ophthalmo-optics.
8. Solve the ophthalmological problems related to the Ophthalmo-optics and know how to find the solution

2- Course contents:

- **Lectures:**

Name of the lecture	Taught hours
Anatomy :	**(30h)**
• Embryology of the globe and adnexa:	**(6)**
-Introduction and embryology of primary and secondary optic vesicles. -Embryology of eye lid , lacrimal system, orbit and its contents(extra ocular muscles, vessels , nerves) -Embryology of cornea, sclera, embryology of zonule and crystalline lens -Embryology of uveal tract -Embryology of retina, optic nerve -Embryology of vitreous	
• Anatomy of the anterior segment :	**(6)**
-Anatomy of the cornea and sclera -Anterior chamber -Anatomy of the uveal tract -Anatomy of crystalline lens -Anatomy of conjunctiva, tenons capsule -Ocular blood supply.	
• Anatomy of the adnexa:	**(6)**
-Anatomy of the orbital - Anatomy of eye lids -Anatomy of lacrimal system -Anatomy of extraocular muscles	
• Anatomy of the posterior segment	**(6)**
-Anatomy of the retina -Anatomy of the vitreous	

• Neuro-ophthalmic anatomy: 1) Anatomy of cranial nerves related to the eye ball and its adenxa Extraocular muscles and optic nerve -4th cranial nerve 6th cranial nerve 3rd cranial nerve 5th cranial nerve 8th cranial nerve 2) Anatomy of higher visual pathway: -Anatomy of optic chiasma -Anatomy of lateral geniculate body -Anatomy of optic radiation -Anatomy of occipital cortex -Autonomic nervous systems to the eye -Anatomy of the brain stem, medial geniculate body -Relation of cerebellum to the eye -Relation of different brain lobes to the eye	**(6)**

Physiology :	**(30h)**
• Cornea: - Physiology, Cell Biology And Biochemistry - Corneal Pharmacology	(2) (2)
• Lens, accommodation: - lens metabolism - Accomodation And Presbyopia	
• Aqueous, IOP: - Aqueous Humor Formation - Composition Of Normal Aqueous Humor - Factors Affecting Intraocular Pressure	(2)
• Pupil	(2)
• Ocular circulation	(2)
• Visual acuity	(2)
• Lacrimal system, · Production Of Tears · Elimination Of Tears	(1)
• Extraocular muscles, · Actions Of Extraocular Muscles · Structure Of Extraocular Muscle Fibers · Types Of Ocular Movements · Supranuclear Control	(2)
• Binocular Vision	(2)
• Photometry	(1)
• Vitreous	(1)
• Retina:	(6)
. chemistry of outer segments . visual pigment dynamics . effect of light on outer segment metabolism . chemical transmission . neurotransmitors . retinal metabolism . retinal pigment epithelium	

• Colour vision	(1)
• Entoptic phenomenon	(1)
• Dark and light Adaptation	(1)
• Electrophysiology:	(2)
<u>Pathology:</u>	**(30h)**
• Basic principles: Inflammation, immunobiology, cellular and time reactions as hyperplasia, hypoplasia, degeneration, dystrophy, necrosis, pigmentation, dyplasia…	(3)
• Congenital anomalies:	(2)
• Conjunctiva: inflamations , degenerations , pigmentatian and tumours	(3)
• Cornea: inflammations, degeneration, dystrophies, pigmentation, tumours	(3)
• Sclera: Inflammation, degenerations, staphyloma	(1)
• Lens: Cataract, exfoliation syndrome.	(1)
• Glaucoma and hypotony: ,(congenital, primary glaucoma, secondary) and hypotory.	(1)
• Uveal tract: Inflammations, degenerations, cysts, choroidal detachment, tumours.	(3)
• Retina: Inflammation, vascular disorders, degenerations, retinal	(2)

detachment and tumours. • Optic nerve: Injuries, inflammations, degenerations, tumours, papilloedema • Eyelids: : Senile change, inflammations, metabolic disorders of tumours. • Lacrimal: inflammations, degenerations, cysts and tumours • Orbit: Inflammations, cysts, tumours. • Eye injuries: Contusions, wounds, Intraocular foreign bodies, sympathetic ophthalmitis, chemical injuries. Immunology of ocular disorders • Microbiology.	(3) (2) (1) (2) (1) (2)

Optics :	**(30h)**
• Physical and geometric optics: Light and its properties. Reflection of light Refraction of light Refraction by prisms and lenses Refraction by the eye.	(7)
• Clinical optics : Optical aberrations, ametropia, accomodation and its disturbances, binocular muscular coordination and anomalies, visual function, retionoscopy, ophthalmoscopy, verification of the refraction of the eye.	(7)
• Ophthalmic appliances: Spectacles, contact lenses, intraocular lenses, low vision aids.	(8)
• Ophthalmic instruments: Microscopes, slit. Lamp, refractometrs, applanation tonometer, keratometer, orthoptic instruments, fundus camera, laser and phototherapeutics, goniolenses, surgical loupes and operating microscope, etc.	(8)

❖ **Practical & clinical skills:**

2 hours/week = 40 hours =1 credit hours

4- Student Assessment

Written exam: 180 marks – 3 hours
Oral exam: 170 marks
Total: 350 marks

5- List of references

- American acedamy of ophthalmology. Basic and clinical science course, 2019-2020
- Clinical anatomy of the eye, Richard S. Snell, Micheal A. Lemp, 2nd edition.
- Adler's Physiology of the Eye - 11th Edition
- Clinical Optics by Andrew R. Elkington – 3rd edition
- Clinical Optics - American Academy of Ophthalmology, 2019-2020
- Ocular Pathology, Myron Yanoff - 8th Edition