EYE Module
4th Year MBBS

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Khyber Medical University (KMU) Vision:

Khyber Medical University will be the global leader in health sciences academics and research for efficient and compassionate health care.

Khyber Medical University (KMU) Mission:

Khyber Medical University aims to promote professional competence through learning and innovation for providing comprehensive quality health care to the nation.

Institute of Health Professions Education & Research (IHPER) Mission:

To produce leaders, innovators and researchers in health professions education who can apply global knowledge to resolve local issues.

Teaching Hours Allocation

Table 1: Teaching Hours Allocation

Theme	In class teaching (Hours)	Clinicals (Hours)	Total (Hours)
Theme 1: Foundation of Ophthalmology	08	25	33
Theme 2: Lid Abnormalities & Bulging Eyes	10	21	31
Theme 3: Red Eye	17	14	31
Theme 4: Visual loss	18	15	33
Theme 5: Childhood Blindness & Crossed Eyes	09	21	30
Total	62	96	158

Learning Objectives

By the end of Eye Module, 4th year MBBS students will be able to:

1. Describe the visual standards.
2. Define and classify blindness.
3. Describe the anatomy and physiology of visual pathway and different visual field defects.
4. Describe the basics and usage of optical coherence tomography (OCT), visual fields and ultrasonography in common eye disorders.
5. Differentiate different types of lid bumps and propose a management plan for it.
6. Discuss ptosis, ectropion and entropion and describe the treatment options.
7. Examine bulgy eyes and investigate different causes of it.
8. Describe the differential diagnosis of red eye.
9. Explain the pathophysiology, and management of different conjunctival inflammations.
10. Explain the pathophysiology, and management of different corneal inflammations.
11. Discuss the pathophysiology, and management of uveal inflammations.
12. Describe the aqueous humor dynamics and its role in glaucoma.
13. Enumerate different causes of gradual visual loss and propose their management plan.
14. Enumerate different causes of sudden visual loss (painful/painless) and propose their management plan.
15. Describe squint, its presentation and principles of management.
16. Enumerate different causes of double vision and propose their management plan.

17. Enumerate different causes of childhood blindness and propose their management plan.
18. Discuss the clinical importance of white pupil in children.
19. Define amblyopia, describe its causes and management.
20. Differentiate between different terms used in ocular trauma.
21. Propose the management plan of ocular injuries.

Specific Learning Objectives

Table 2: Theme I

Theme 1: Foundation of Ophthalmology		
Topic	**Learning objectives**	**Hours**
Standards Of Vision and Blindness	1. Discuss visual standards and blindness according to WHO classification.	01
Pupil Reflexes and Drugs Used In Common Eye Conditions	2. Describe the normal and abnormal pupil reflexes. 3. Discuss drugs used in common eye diseases.	01
Visual Pathway and Visual Field Defects	4. Describe the visual pathway. 5. Describe the common visual field defects.	01
Optical Coherence Tomography (OCT) and Visual fields (VF)	6. Discuss the uses of OCT and VF in ophthalmology.	01
Fundus Fluorescein Angiography (FFA) and Ultrasonography	7. Discuss the uses of FFA and Ultrasonography in ophthalmology.	01
Optics & Eye	8. Discuss visual functions (visual acuity, color vision, contrast sensitivity, light brightness), Refraction, Pseudophakia, Aphakia, and Anisometropia	01
Refractive Errors	9. Discuss pathophysiology and clinical presentation of myopia, hypermetropia, astigmatism and presbyopia	01
Correction of Refractive Errors	10. Describe management of myopia, hypermetropia, astigmatism and presbyopia.	01

Table 3: Theme 2

Theme 2: Lid abnormalities & Bulging Eyes		
Topic	**Learning objectives**	**Hours**
Differential Diagnosis Of Lid Bumps	1. Discuss overview of different causes of lid bumps.	01
Chalazion, Stye	2. Describe pathophysiology and management of chalazion and stye.	01
Tumors of Eyelids	3. Discuss different eyelid tumors and its pathogenesis.	01
Management of Lid Bumps	4. Describe management plan of lid bumps.	02
Ptosis	5. Discuss causes of ptosis, assessment and their management.	01
Trichiasis, Entropion and Ectropion	6. Discuss Trichiasis, Entropion and Ectropion, assessment and their management.	01
Proptosis – Basics	7. Discuss the etiology, clinical features, investigation and management of proptosis in children and adults	01
Preseptal and Orbital Cellulitis	8. Discuss the etiology, clinical features, investigation and management of proptosis in children and adults. 9. Enumerate Differential diagnosis / causes of proptosis in children and adults.	01
Thyroid Eye disease (TED)	10. Discuss the etiology, clinical features, investigation and management of TED.	01
Myasthenia Gravis & Migraine	11. Discuss the etiology, clinical features, investigation, and management of Myasthenia Gravis. 12. Discuss the etiology, clinical features, investigation, and management of Migraine.	01

Table 4: Theme 3

Theme 3: Red Eye		
Topic	**Learning objectives**	**Hours**
Red eye	1. Enumerate causes of red eye. 2. Describe pathophysiology and management of different conjunctival (Bacterial/Viral/Fungal/Allergic) inflammations.	02
Corneal Inflammations/Infections	3. Discuss the etiology, clinical features, investigation, and management of non-infectious corneal inflammations. 4. Discuss investigations for corneal ulcers.	01
Bacterial Keratitis	5. Discuss the etiology, clinical features, investigation, and management of different bacterial corneal ulcers.	01
Fungal, Viral & Acanthamoeba Keratitis	6. Discuss the etiology, clinical features, investigation, and management of different fungal, viral & acanthamoeba corneal ulcers.	02
Dacryocystitis	7. Discuss the etiology, clinical features, investigation, and management of congenital nasolacrimal duct obstruction. 8. Assess the time of probing in children. 9. Differentiate between acute, acute on chronic and chronic Dacryocystitis. 10. Discuss the etiology, clinical features, investigation, and management of Dacryocystitis.	01
Dry Eyes	11. Discuss the etiology, clinical features, investigation, and management of Dry Eyes with special emphasis on Vit. A deficiency and Sjogren's syndrome.	01
Blepharitis	12. Discuss the etiology, clinical features, investigation, and management of blepharitis.	01

Pterygium, Pseudo-Pterygium, Episcleritis & Scleritis	13. Describe differences between Pterygium, Pseudo-pterygium, Episcleritis & Scleritis and their management.	01
Basic Concepts In Ocular Trauma	14. Discuss definitions, classification & clinical evaluation of ocular injuries and principles of management. 15. Discuss corneal and conjunctival foreign bodies and their treatment.	01
Open Globe Injury (OGI) / IOFB / Sympathetic Ophthalmia (SO)	16. Classify OGI. 17. Discuss the etiology, clinical features, investigation, and management of OGI and IOFB. 18. Discuss the etiology, clinical features, investigation, and management of SO.	01
Closed Globe Injury (CGI) Orbital Floor Injury	19. Discuss the etiology, clinical features, investigation, and management of CGI. 20. Classify CGI.	01
Radiation, Thermal, Chemical Injuries	21. Discuss the etiology, clinical features, investigation, and management of radiation injury. 22. Discuss the etiology, clinical features, investigation, and management of thermal injury 23. Discuss the etiology, clinical features, investigation, and management of chemical injury.	01
Visual Rehabilitation	24. Discuss various options of visual rehabilitation after ocular trauma. 25. Discuss rehabilitation services for blind people in our setup.	01
Uveitis – Basics	26. Discuss Definitions, classifications, history & workup of uveitis.	01
Anterior & Posterior Uveitis	27. Discuss the etiology, clinical features, investigation, and management of Anterior uveitis. 28. Discuss the etiology, clinical features, investigation, and management of Posterior Uveitis.	01

Table 5: Theme 4

Theme 4: Visual loss		
Topic	**Learning objectives**	**Hours**
Visual Loss & Intraocular Pressure (IOP)	1. Classify causes of visual loss in following order: 2. Visual Loss associated with Anterior segment. 3. Visual Loss associated with Posterior segment. 4. Discuss Aqueous humor dynamics and its role in IOP. 5. Enumerate causes of gradual & sudden visual loss. 6. Define and Classify Glaucoma.	01
Open angle glaucoma	7. Discuss the differences between POAG, NTG and OHT. 8. Discuss the etiology, clinical features, investigation, and management of POAG. 9. Discuss the etiology, clinical features, investigation, and management of NTG. 10. Discuss the etiology, clinical features, investigation, and management of OHT.	01
Primary Angle Closure Glaucoma (PACG)	11. Discuss the stages of PACG. 12. Discuss the etiology, clinical features, investigation, and management of Acute angle closure.	01
Neovascular Glaucoma & Lens Induced Glaucoma	13. Discuss the etiology, clinical features, investigation, and management of Neovascular glaucoma.	01

	14. Discuss the etiology, clinical features, investigation, and management of lens induced glaucoma.	
Treatment Options In Glaucoma	15. Enumerate different treatment options in glaucoma. 16. Discuss the indications of each treatment option.	01
Cataract	17. Define cataract. 18. Describe the types of Age-related cataract. 19. Describe the pathogenesis and complications of cataract. 20. Describe the management of cataract.	01
Cataract Surgery Complications	21. Discuss the etiology, clinical features, investigation, and management of Endophthalmitis. 22. Discuss the etiology, clinical features, investigation, and management of Panophthalmitis.	01
Corneal Ectasia, Dystrophy & Degeneration	23. Discuss the etiology, clinical features, investigation, and management of keratoconus. 24. Give overview of corneal dystrophies and degenerations.	01
Diabetic Eye Disease	25. Discuss the effects of diabetes on eye. 26. Discuss the etiology, clinical features, investigation, and management of Diabetic Eye Disease (Diabetic Retinopathy and maculopathy).	01
Hypertensive Retinopathy	27. Discuss the effects of hypertension on eye. 28. Discuss the etiology, clinical features, investigation, and management of Hypertensive Retinopathy.	01

Central Retinal Vein Occlusion (CRVO) And	29. Discuss the etiology, clinical features, investigation, and management of CRVO.	01
Central Retinal Artery Occlusion (CRAO)	30. Discuss the etiology, clinical features, investigation, and management of CRAO.	01
Retinal Detachment (RD)	31. Discuss the etiology, clinical features, investigation, and management of RD.	01
Choroidal Melanoma	32. Discuss the etiology, clinical features, investigation, and management of choroidal melanoma. 33. Describe the importance of this condition on mortality.	01
Night Blindness – Retinitis Pigmentosa, Vit. A Deficiency	34. Discuss the etiology, clinical features, investigation, and management of Retinitis pigmentosa. 35. Discuss the etiology, clinical features, investigation, and management of Vit. A deficiency.	01
Optic neuritis	36. Classify optic neuritis. 37. Discuss the etiology, clinical features, investigation, and management of optic neuritis.	01
Hereditary, Nutritional & Toxic Optic Neuropathies	38. Discuss the etiology, clinical features, investigation, and management of these optic neuropathies.	01
Papilledema	39. Describe the difference between papilledema and disc swelling. 40. Discuss the etiology, clinical features, investigation, and management of papilledema.	01

Table 6: Theme 5

Theme 5: Childhood Blindness & Crossed Eyes		
Topic	**Learning objectives**	**Hours**
White pupil (leukocoria) and Retinoblastoma (RB)	1. Describe the importance of white pupil in children. 2. Differentiate different causes of white pupil in children. 3. Discuss investigations in white pupil. 4. Discuss the etiology, clinical features, investigation and management of RB.	01
Congenital Cataract	5. Define congenital cataract. 6. Describe the types of congenital cataracts. 7. Describe the pathogenesis and complications of congenital cataracts. 8. Describe the management of congenital cataracts.	01
Congenital Glaucoma	9. Discuss the etiology, clinical features, investigation and management of Congenital Glaucoma.	01
Amblyopia	10. Define Amblyopia. 11. Discuss the etiology, clinical features, investigation, and management of amblyopia.	01
Squint – Basics	12. Discuss definitions, clinical evaluation of squint and principles of management	01
Concomitant Squint Esotropia	13. Define concomitant squint.	01

	14. Discuss the etiology, clinical features, investigation, and management of esotropia.	
Exotropia	15. Discuss the etiology, clinical features, investigation, and management of exotropia.	01
Diplopia & Incomitant Squint	16. Discuss differential diagnosis/causes of diplopia. 17. Define incomitant squint. 18. Discuss the etiology, clinical features, investigation, and management of 3rd nerve palsy. 19. Discuss the etiology, clinical features, investigation, and management of 4th nerve palsy. 20. Discuss the etiology, clinical features, investigation, and management of 6th nerve palsy.	01

Clinical Schedule

Table 7: Foundation of Eye

Theme 1: Foundation of Ophthalmology			
Topic	**Learning objectives**	**Assessment method**	**Hours**
1. History Taking 2. Visual Acuity	• Take detailed history in ocular conditions • Check visual acuity.	OSCE	03 + 02
3. Pupil Examination	• Perform pupillary examination.	OSCE	03
4. Visual Fields (Confrontation)	• Perform visual fields examination by confrontation methods.	OSCE	03
5. Slit-Lamp Examination	• Identify parts of slit-lamp	OSCE	01
6. Anterior Segment Examination	• Examine anterior segment on slit lamp	OSCE	01
7. Direct Ophthalmoscopy	• Perform direct ophthalmoscopy	OSCE	02
8. Retinoscopy	• Identify trial lenses used in refraction.	OSCE	03
9. Indirect Ophthalmoscopy	• Perform indirect ophthalmoscopy	OSCE	02
Investigations 10. OCT 11. Visual Fields 12. Biometry 13. B-Scan 14. FFA 15. Corneal Topography	Describe/interpret the results of: • OCT • Visual fields • Biometry • B-scan • FFA & Corneal topography	OSCE	03 + 02

Table 8: Abnormalities of Lid & Bulging of Eyes

Theme 2: Lid Abnormalities & Bulging Eyes			
Topic	**Learning objectives**	**Assessment method**	**Hours**
16. Eversion Of Upper Lids	• Observe Eversion of upper lids	OSCE	01
17. Ptosis Examination	• Perform ptosis examination.	OSCE	03
18. Ptosis And Its Surgeries	• Observe ptosis surgery	OSCE	03
19. Lids Abnormalities	• Examine common lid abnormalities (Ectropion, Entropion, Chalazion, Stye)	OSCE	03
20. Lids Surgery Related Instruments	• Identify instruments used in lids surgery	OSCE	03
21. Lid Reconstruction Procedures	• Observe lid reconstruction procedures	OSCE	05
22. Proptosis	• Observe proptosis	OSCE	03

Table 9: Red Eye

Theme 3: Red Eye			
Topic	**Learning objectives**	**Assessment method**	**Hours**
23. Use Of Topical Anesthesia and Staining	• Perform topical anesthesia and staining.	OSCE	01
24. Removal Of Superficial Foreign Bodies	• Observe corneal foreign body removal.	OSCE	01
25. Corneal Scrapping	• Observe corneal scrapping.	OSCE	02
26. Keratoplasty Surgery	• Observe keratoplasty.	OSCE	03
27. Lacrimal Regurgitation Test	• Perform lacrimal regurgitation test.	OSCE	01
28. Dacryocystorhinostomy (DCR) Surgery & Its Instruments	• Observe DCR surgery and identify instruments used	OSCE	03
29. Ocular Trauma	• Observe first aid to Ocular trauma • Perform eye wash in chemical injury.	OSCE	03
30. Globe Repair Surgery	• Observe OGI surgery.	OSCE	03

Table 10: Visual Loss

Theme 4: Visual Loss			
Topic	**Learning objectives**	**Assessment method**	**Hours**
31. Normal Disc 32. Disc Abnormalities 33. Swollen Disc(S)	• Examine normal disc • Examine glaucomatous disc. • Examine swollen disc	OSCE	03
34. Detection Of Retinal Lesions 35. Retinal Vascular Diseases	• Detect common retinal conditions • Differentitate different retinal vascular conditions.	OSCE	03
36. Retinal Detachment	• Identify RD in pictures • Observe Retinal detachment surgery	OSCE	03
37. Use Of Lasers In Eye 38. Intravitreal Injections	Discuss • Use of lasers in eye • Intravitreal injections	OSCE	02
39. Tonometry	Observe goldman tonometery	OSCE	01
40. Glaucoma Filtration Surgery	Observe Glaucoma filtration surgery	OSCE	03

Table 11: Childhood Blindness

Theme 5: Childhood Blindness & Crossed Eyes			
Topic	**Learning objectives**	**Assessment method**	**Hours**
41. Congenital Glaucoma	• Observe congenital glaucoma examination (EUA) and surgery	OSCE	03
42. Cataract (Adult and Ccongenital)	• Detect cataract on ocular examination	OSCE	03
43. Cataract surgery	• Observe types of Adult and Congenital cataract surgery	OSCE	03 + 03
44. Extraocular Mmovements	• Perform extraocular movements and squint examination	OSCE	03
45. Squint Eexamination	• Perform cover / uncover / alternate cover tests • Identify the pattern of squint (Esotropia vs. Exotropia)	OSCE	03
46. Squint Surgery	• Observe squint surgery	OSCE	03

Learning Resources

S#	Subjects	Resources
1.	Anatomy	**A. GROSS ANATOMY** 1. K.L. Moore, Clinically Oriented Anatomy **B. EMBRYOLOGY** 1. Keith L. Moore. The Developing Human 2. Langman's Medical Embryology
2.	Community medicine	1. Preventive and Social Medicine by K Park 2. Community Medicine by M. llyas 3. Basic Statistics for the Health Sciences by Jan W Kuzma 4. Textbook of Community Medicine and Public Health, 2018. Saira Afzal, Sabeena Jala
3.	Ophthalmology	Vaughan & Asbury's General Ophthalmology, 18th Edition
4.	Pathology	1. Robbins & Cotran, Pathologic Basis of Disease,9 th edition. 2. Rapid Review Pathology,4 th edition by Edward F. Goljan MD
5.	Pediatrics	1. Nelson Textbook of Pediatrics, 19th Edition 2. Textbook of Pediatrics by PPA, preface written by S. M. Haneef 3. Clinical Pediatrics by Lakshmanaswamy Aruchamy, 3rd Edition
6.	Pharmacology	1. Lippincot Illustrated Pharmacology 2. Basic and Clinical Pharmacology by Katzung

7.	Physiology	1. Textbook Of Medical Physiology by Guyton And Hall 2. Ganong ‘ S Review of Medical Physiology 3. Human Physiology by Lauralee Sherwood 4. Berne & Levy Physiology 5. Best & Taylor Physiological Basis of Medical Practice

Assessment Plan – 4th Year MBBS

The year-4 will be assessed in 4 blocks

1) Block-1 (Neurosciences-2 module) will be assessed in **paper-J**
2) Block-2 (GIT and hepatobiliary module) will be assessed in **paper-K**
3) Block-3 (Renal-2, Endocrine & Reproduction-2 module) will be assessed in **paper-L**
4) Block-4 (ENT and EYE modules) will be assessed in **paper-M**
5) Each written paper consists of 120 MCQs.
6) Internal assessment will be added to final marks in KMU as shown in below table.
7) In OSPE, each station will be allotted 6 marks, and a total of 120 (+10% marks of internal assessment) marks are allocated for each OSPE/OSCE examination.

4th Year MBBS Modules Assessment Plan						
Theory paper	**Modules**	**Theory marks**	**Internal assessment theory (10%)**	**OSPE/OSPE**	**Internal assessment OSPE/OSPE (10%)**	**Total Marks**
Paper J	Neurosciences-2	120	13	120	13	266
Paper K	GIT-2	120	13	120	13	266
Paper L	Renal-2, Endocrine & Reproduction-2	120	14	120	13	267
Paper M	ENT and EYE	120	13	120	13	266
Research*				20	15	35
Total Marks		**480**	**53**	**500**	**67**	**1100**

*Research viva of 20 marks will be conducted in paper-L. However, the rest of 15 marks will be decided by the concerned department internally for the contribution of the students in research project/thesis.

Assessment Blueprints

Table 12: Paper M (Eye & ENT)

Subject	Total MCQs
ENT	60
EYE	60
Total	**120**

Table13: OSCE distribution

Subject	Total OSCE stations
ENT	10
EYE	10
Total	**20**

A minimum of 20 stations will be used in final exams. Total marks will be 120 (6 marks for each station).