

MBBS PROGRAM, DEPARTMENT OF OPHTHALMOLOGY – BMU



DEPARTMENT OF OPHTHALMOLOGY

STUDY GUIDE

MBBS 2024

MBBS PROGRAM, DEPARTMENT OF OPHTHALMOLOGY – BMU

**SYALLABUS LEARNING AND
ASSESSMENT PROGRAM**

OPHTHALMOLOGY (Total 156 Hours)

MBBS

BAQAI MEDICAL UNIVRSITY

INTRODUCTION

Preventable and / or treatable blindness is huge burden on various aspects of developing countries' functioning. This is particular true in Pakistan where, according to a relatively recent study¹ about 1.2 million are blind, several times of that number suffer from subnormal vision due to disease that could have been prevented or treated if early intervention was done.

This is the reason why the health authorities of Pakistan give stress on the course of ophthalmology, which seems out of proportion to that in advanced in countries 2. Furthermore, since prevention and early intervention can very easily reduce this load, the Baqai University, being a community oriented university, stresses on the preventive and community aspect of ophthalmology.

REFERENCES:

1. Hassan B, Ahmed R, Li B, Noor A, Hassan ZU. A comprehensive study capturing vision loss burden in Pakistan (1990-2025): Findings from The Global Burden of Disease (GBD) 2017 study. PLoS One. 2019 May 3;14 (5)
2. Hill S, Dennick R, Amoaku W. Present and future of the undergraduate Ophthalmology curriculum: a survey of UK medical schools. Int J Med Educ. 2017 Nov 2; 8 : 389-395

OUR MISSION

BMU is situated at the verge of Urban and city areas of Karachi. This enables the Ophthalmic Faculty to prepare medical graduates in ophthalmology who are both well informed about National Eye problems and thoroughly acquainted with the theory practical of the modern medical practices, enabling them to merge seamlessly in the medical system of technologically advanced countries, should they decide to do so.

The MBBS under-graduates receive community based education, utilizing the several Out-Reach primary and secondary Centers in urban Karachi as well as the rural areas in the Sindh and Baluchistan provinces.

OUR VISION

We strive to develop the current learning further, to produce the Medical Graduates who have leadership qualities made possible by their command of information of local as well as international health problems and their modern solution, so, in addition to the routine patient care, they may be able to advise the Provincial and Federal Governments, and are informed enough to be a health advisor to the international health organizations.

TEACHING / LEARNING ACTIVITIES, AND MODES OF TEACHING AND ASSESSMENT

Learning activities, apart from the weekly didactic lecture, are to be student oriented and case based. Incentive of student is crucial and it should be developed as the students learn the problem solving skills, early during the learning process.

There will be a blend of conservative of education, i.e. didactic lectures, small group discussion, bed-side/ closed circuit slit lamp projection, pre-recorded image/ video presentations, simulations, and online tuition & assessment.

FACULTY INTRODUCTION

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Currently, there are one faculty members:

1. Professor: Dr. Mir Amjad Ali, MBBS, FCPS (21 years of teaching experience)
2. Dr. Abdul Khalique, Senior Registrar (1 year of teaching experience)

LIAISON BETWEEN STUDENTS AND FACILITATORS

There is constant interaction between the students class or individual student via communication between the two Class Representatives, and the students' official WhatsApp Group.

CLINICAL TEACHING AND ASSESSMENT

(FOURTH YEAR MBBS)

The goal at the end of the four weeks of fourth year clinical rotation will be-that the student is able to identify the common eye disease in real patients and demonstrate the knowledge of risk factors and principals of management of these diseases, especially the ocular emergencies and preventable/ treatable causing blindness.

They will be required to perform common outpatient ophthalmic procedures without supervision. In addition they should be familiar with the surgical procedures routinely performed in the eye OPD and OT. (Observe status).

The clinical/ practical aspects of all the topics included in the weekly lecture program will be covered during the clinical rotations. (Vide Infra)

THE TYPICAL DAILY CLINICAL TIME TABLE

At the outset, students will be divided in smaller, equal, sub groups of their own choices, facilitators intervening only if the groups are too lopsided in any sense. One of the groups will attend twice weekly operating sessions in the OR in rotation.

A review of basic ocular anatomy, physiology and the ophthalmic history taking and clinical examination will be covered in the first two days. Thereafter the following schedule will be followed.

8:30 AM to 11:30 AM

A real or virtual case/ problem will be given to the students and an hour allowed to find the answers on their by discussing within groups and brain storming, using prior clinical experience in third year, and referring to text books, internet, etc.

1:30 PM To 3:30 PM (Mondays and Tuesdays)

Tutorials of the clinical skills the students are required to perform on their own (Vide Infra).

**CLINICAL SKILLS OF OPHTHALMIC PROCEDURES FOR
UNDERGRADUTE MEDICAL STUDENTS (As Required by the
PMDC/ PMC)**

Definition of Levels of Skills/ Competence

Level-1	Have Observed
Level-2	Able to Assist
Level-3	Perform Under Supervision
Level-4	Perform Independently

LEVEL 4 Skills (To be learnt on real patients by means of closed circuit live display from the slit lamp, assisted by recorded videos/ animations/ Simulations), and performed on real or simulated patients.

1. Determine Visual Acuity (with and without Pinhole), and record it.
2. Perform ocular examination of eye with torch (up to the lens) and record normal and abnormal findings.
3. Elicit papillary light reflexes and demonstrates relative afferent papillary defect (RAPD) by means of Swinging Flashlight Test.
4. Perform Regurgitation Test for blocked nasolacrimal duct and interpret the result.
5. Evert the upper eye lid and determine presence of follicles, papillae, and foreign body, if any of these are present.
6. Determine any ocular deviation by means of Hirschberg corneal reflex test, and perform cover/uncover test to determine orthophoria or any deviation and its type.
7. Determine grossly abnormal intraocular pressure by means of digital palpation.

3RD YEAR MBBS

The goal during the clinical rotations in 3rd Year MBBS is to familiarize the students, at the outset, about the type of disease that commonly occur in our population, and how they are presented in the OPD. This will make the systematic approach, which they will follow in the fourth year, more meaningful; a long term flipped learning.

Initial two days' interactive discussions, with the aid of images, will introduce the student to clinical anatomy, basic physiology, history taking and examination. At the end of the second day they will be required to demonstrate their ability to tell normal anatomy from abnormal, up to the level of crystalline lens, using torch light, on patients or by means of images. They will spend rest of their time in Out Patient Department, facilitated by the consultants/ registrars present in the OPD. They will be encouraged to actively initiate the learning process, and this will be part of the internal evaluation.

The grade will be the Low-stakes internal evaluation, and will be based on formative assessment and attendance. There will be no high-stakes summative assessment in 3rd year.

COMPUTATION OF THE TEACHING HOURS
OPHTHALMOLOGY

4TH YEAR MBBS Baqai Medical College)

(According to the Lecture/ Clinics program provided for 2021)

LECTURES:

One weekly

60 min: Duration

30 lectures per year

= Total 30 hours

Special Lecture before Annual Theory Exam (Last Minute Checklist)

01 hour

Special Lecture before Annual Practical/ Viva Exams

01 hour

CLINICAL POSTING:

8:30 AM to 11:30 AM

(3 hours)

4 days/ week

12 hours per week

TOTAL 48 hours per month

TUTORIAL:

Three times a week

1:30 PM to 3:30 PM

6 hours per week

6 x 4

Total 24 hours per month

COMPUTATION:

Lectures (including special lectures)	30 hours per year
Clinics	55 hours per year
Tutorial	16
<u>Total hours</u>	<u>101 hours (4th year MBBS)</u>

**3rd year MBBS
CLINICAL ROTATION**

Monday	10:15 am to 1:00 pm = 2 hours 45 min (165 min)
Tuesday	10:15 am to 1:00 pm = 2 hours 45 min (165 min)
Wednesday	11:00 am to 1:00 pm = 2 hours (120 min)
Thursday	10:15 am to 1:00 pm = 2 hours 45 min (165 min)
Friday	10:15 am to 1:10 pm = 2 hours 55 min (175 min)

MINUTES OF EACH WEEK (790) converted into hours = 13 hours

Total hours per month (hence during entire 3rd Year) (13 x 4 = **52 hours per month**)

GRAND TOTAL HOURS OF MBBS PROGRAM COMBINES

2nd year total teaching hours = 3 hours

3rd year total teaching hours = 52 hours

4th year total teaching hours = 105 hours

GRAND TOTAL HOURS OF MBBS PROGRAM COMBINED = 156 hours

LECTURE PROGRAMME

SECOND YEAR MBBS 2023-2024

S. NO	DATE	SUBJECT	TOPIC	LECTURER
1	16-08-2024	<u>REFRACTIVE SURGERY</u>	LASSIC	Prof. Dr. Mir Amjad Ali
4	19-08-2024	<u>PAPILLARY REFLEX</u>	PAPILLARY REFLEX	Dr. Abdul Khaliq
5	21-08-2024	<u>SQUINT</u>	SQUINT	Prof. Dr. Mir Amjad Ali

LECTURE PROGRAMME
FOURTH YEAR MBBS 2023-2024

S. NO	DATE	SUBJECT	TOPIC	LECTURER
1		<u>EYE LIDS</u>	ANATOMY BLEPHARITIS	Prof. Dr. Mir Amjad Ali
2			ENTROPION, ECTROPION, TRICHIASIS, STYE, CHLAZION	Prof. Dr. Mir Amjad Ali
3			PTOSIS, EYE LID TUMOR	Prof. Dr. Mir Amjad Ali
4		<u>LACRIMAL APPARATUS</u>	ANATOMY LACRIMATION, EPIPHORA ACUTE AND CHRONIC DACRYOSYSTITIS	Dr. Abdul Khalique
5		<u>SCLERA</u>	ANATOMY SCLERITIS AND EPISCLERITIS	Prof. Dr. Mir Amjad Ali
6		<u>OCULAR THERAPEUTIC</u>	ANTIBIOTIC, ANTIVIRAL, ANTIFUNGAL, ANTIGLAUCOMA, LOCAL ANAESTHETIC, STEROID, MYDRALATIC, CYCLOPLEGIC, FLOURESCIEN DYE	Dr. Abdul Khalique
7		<u>REFRACTIVE ERROR</u>	EMETROPIA, MYOPIA, HYPERMETROPIA, ASTIGMATISM, PRESBYOPIA, ANISOMETROPIA, AMBLYOPIA	Prof. Dr. Mir Amjad Ali
8		<u>CORNEA</u>	ANATOMY CHARACTERISTIC OF DIFFERENT LAYERS OF CORNEA	Dr. Abdul Khalique
9			RISK FACTOR, CLINICAL FEATURE AND MANAGEMENT OF BACTERIAL AND FUNGAL KERATITIS	Dr. Abdul Khalique
10			CLINICAL FEATURE AND MANAGEMENT OF HERPES SIMPLEX KERATITIS	Dr. Abdul Khalique
11		<u>CONJUNCTIVA</u>	ANATOMY BACTERIAL, VIRAL AND ALLERGIC CONJUNCTIVITIS	Prof. Dr. Mir Amjad Ali
12			TRACHOMA PTERYGIUM AND ITS MANAGEMENT DRY EYES	Prof. Dr. Mir Amjad Ali

LECTURE PROGRAMME

13		<u>CRYSTALLINE LENS</u>	ANATOMY CLASSIFICATION OF CATARACT	Dr. Abdul Khalique
14			ACQUIRED CATARACT AND ITS MANAGEMENT	Dr. Abdul Khalique
15			CONGENITAL CATARACT AND ITS MANAGEMENT	Dr. Abdul Khalique
16		<u>GLAUCOMA</u>	GLAUCOMA DEFINITION, CLASSIFICATION OF GLAUCOMA PRIMARY OPEN ANGLE GLAUCOMA AND ITS MANAGEMENT	Prof. Dr. Mir Amjad Ali
17			ANGLE CLOSURE GLAUCOMA	Prof. Dr. Mir Amjad Ali
18			SECONDARY GLAUCOMA DUE TO HYPERMATURE CATARACT AND UVEITIS AND ITS MANAGEMENT	Prof. Dr. Mir Amjad Ali
19		<u>UVEITIS & PUPIL</u>	ANATOMY OF UVEAL TRACT CLASSIFICATION OF UVEITIS	Dr. Abdul Khalique
20			ANTERIOR INTERMEDIATE AND POSTERIOR UVEITIS & PUPILLARY REFRACTION AND THEIR COMMON ABNORMALITIES	Dr. Abdul Khalique
21		<u>RETINA</u>	RETINAL DETACHMENT	Prof. Dr. Mir Amjad Ali
22			DIABETIC RETINOPATHY HYPERTENSIVE RETINOPATHY AND ITS MANAGEMENT	Prof. Dr. Mir Amjad Ali
23			BRANCH RETINAL VEIN OCCLUSION CENTRAL RETINAL VEIN OCCLUSION CENTRAL RETINAL ARTERY OCCLUSION	Prof. Dr. Mir Amjad Ali

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LECTURE PROGRAMME

24		<u>NEURO OPHTHALMO- -LOGY</u>	OPTIC NEURITIS, OPTIC ATROPHY, PAPILLOEDEMA	Prof. Dr. Mir Amjad Ali
25			VISUAL FIELD DEFECTS IN NEUROLOGICAL LESION	Prof. Dr. Mir Amjad Ali
26			III, IV, VI, VII, CRANIAL NERVE DEFECTS	Prof. Dr. Mir Amjad Ali
27		<u>SQUINT</u>	DEINITION OF ESTROPIA AND EXTROPIA, CLASSIFICATION AND PRINCIPLE OF MANAGEMENT	Dr. Abdul Khalique
28		<u>VITAMIN A DEFICIENCY + PROPTOSIS</u>	NIGHT BLINDNESS AND VITAMIN A DEFICIENCY & DYSTHYROID EYE DISE	Prof. Dr. Mir Amjad Ali
29		<u>OCULAR TAUMA</u>	OCCULAR FOREIGN BODIES CLOSED AND OPEN GLOBE INJURIES	Dr. Abdul Khalique
30			CHEMICAL INJURIES AND ITS MANAGEMENT	Dr. Abdul Khalique

APPENDIX

SPECIFIC LEARNING OUTCOMES OF LECTURES

At the commencement of every lecture well defined specific learning outcomes (SLOs) of that day's lecture will be presented and it will be stressed that *at the end of this lecture the student should be able to demonstrate the knowledge and comprehensive of the given points, as assessed by any suitable assessment toll.*

Following are the slos to be presented before every year lecture (vide supra), and these will be presented again at the end of the lecture formative assessment would be done by means of a short interactive session.

CONJUNCTIVA

CONJUNCTIVA 1

- Differentiation of different parts of conjunctiva
- Blood supply, and lymphatic drainage of conjunctiva
- Identification of an inflamed conjunctiva
- Differentiation between ciliary and conjunctival congestion
- Differentiation between Viral, Allergic, and Bacterial conjunctivitis
- Basic principles of management of bacterial conjunctivitis

CONJUNCTIVA 2

- Main symptoms of allergic conjunctivitis
- Hallmark symptoms of Vernal Kerato – conjunctivitis (VKC)
- Diagnostic signs of VKC
- Complications of VKC
- Basic principles of VKC management

CONJUNCTIVA 3

- Definition of pterygium
- Basic pathogenesis of pterygium
- Signs and symptoms of ptergium
- Difficulties encountered during and after its surgery and ways to counter them

EYELIDS

At the end of the lectures to student should be able to demonstrate his knowledge of the following, whichever suitable tool of assessment is employed.

EYELIDS 1

- Blood supply, innervations, and lymphatic drainage of the eyelids.
- Tissue layers of the eyelids
- Normal position of the eyelid. Lid margins, and the eye lashes
- Muscles involved in opening and closing of the eyelids
- Broad classifications headings of the eye lid disorder according to the pathogenesis

EYELIDS 2

- Definition of blepharitis
- Types of blepharitis with signs and symptoms of each type
- Principals of management of the two type of blepharitis
- Etiology, basic pathology, signs and symptoms, and management of chalazion
- Cause, basic pathology, and management of infected chalazion (hordeolum internum)
- Differences between the a sty and chalazion

EYELIDS 3

- Clinical appearance, behavior, and management of Basal Cell Carcinoma
- Knowledge that Squamous Cell Carcinoma and Adenocarcinomas are second common tumors
- Knowledge that it is possible that rarely any type of tumor can arise from any tissue the eye lids are made of
- Definition, common cause, complications and principles of management of Entropion
- Definition, common cause, complications and principles of management of Trichiasis
- Definition of ptosis, knowledge that it can be congenital and acquired, and that a unilateral congenital ptosis can produce amblyopia unless surgically corrected before 7 years age

CORNEA

CORNEA 1

- Functions of cornea
- Name the different layers of cornea (from anterior to posterior)
- Main histological characteristics of each layer
- Particular functions of each layer
- How each layer responds to injury
- How the cornea is kept clear

CORNEA 2

- The predisposing factors for corneal infections
- General clinical presentation of bacterial and fungal corneal ulcers
- Principles of management of bacterial and fungal corneal ulcers
- Common complications of bacterial and fungal corneal ulcers
- Clinical features of herpes simplex keratitis
- Management of herpes simplex keratitis

OCULAR TRAUMA

OCULAR TRAUMA 1

- Definition and clinical features of hyphema
- Complications of hyphema
- Management of hyphema
- Diagnosis of superficial foreign bodies of ocular surface
- Management of superficial foreign bodies of ocular surface
- Principles of management of ocular penetrating injuries, with and without retained

OCULAR TRAUMA 2

- Emergency management of chemical burns of the eye
- Definition of sympathetic ophthalmitis
- Prevention and management of sympathetic ophthalmitis

SCLERA

- Gross and microscopic anatomy of sclera
- Functions of sclera
- General clinical features of episcleritis
- General clinical features of different types of scleritis
- Systemic disease association of scleritis
- Principles of management of scleritis

LACRIMAL APPARATUS

LACRIMAL APPARATUS 1

- Composition of the tear film
- Formation of different elements of tear film
- Normal production of different elements of the tear film
- Normal drainage of tears

LACRIMAL APPARATUS 2

- Common causes and clinical features of dry eyes
- Principles of management of dry eyes
- Common systemic associations of dry eye
- Difference between epiphora and lacrimation
- Congenital and acquired blocked naso-lacrimal blockage
- Clinical features and management of acute dacryocystitis
- Clinical features and management of chronic dacryocystitis
- Basic principle of dacryo-cysto rhinostomy

UVEAL TRACT

- Typical clinical features of anterior uveitis
- General principles of management of most common types of anterior uveitis
- Differentiating features from other cause of red eyes

CRYSTALLINE LENS

LENS 1

- Definition of cataract
- Anatomy of lens capsule, fibers and suspensory ligaments
- Classification of cataract

LENS 2

- Common morphological type of senile cataract and their typical symptoms
- Principles of cataract surgery
- Pro-operative evaluation of cataract surgery, including biometry
- Major steps of phacoemulsification
- Major operative and post-operative complications of phacoemulsification

LENS 3

- Lamellar congenital cataract, its morphology and causes
- Special problem in the management of congenital cataract
- Cataract secondary to systemic disease, corticosteroids, uveitis and trauma

GLAUCOMA

GLAUCOMA 1

- Definition and classification of glaucoma
- Definition of primary open angle glaucoma (POAG)
- Clinical features and diagnostic modalities of POAG

GLAUCOMA 2

- Definition and pathogenesis of primary angle-closure glaucoma (PACG)
- Clinical features and management of PACG
- Main features of secondary glaucoma due to uveitis, cataract and corticosteroids

GLAUCOMA 3

- Principles of medical management of glaucoma
- Main classes of antiglaucoma drugs and their mode of action
- Principles of surgical management of glaucoma

VITREO-RETINA

VITREO-RETINA 1

- General anatomical landmarks of retina and vitreous
- Common causes, and symptoms of vitreous hemorrhage
- Significance and clinical features of posterior vitreous detachment
- Clinical features predisposing factors and emergency measures for primary retinal detachment

VITREO-RETINA 2

- Clinical feature, complications and managements of central and branch vein occlusion
- Clinical features and significance of central and branch artery occlusion

VITREO-RETINA 3

- EDTRS classification of diabetic retinopathy (DR)
- Prevention and management of DR in different stages
- Simple classification of hypertensive retinopathy

VITREO-RETINA 4

- Heredity, clinical features and prognosis of retinoblastoma
- Principles of management of retinoblastoma
- Heredity pattern and clinical feature of retinitis pigmentosa

OPTIC NERVE

- Anatomy of optic nerve
- Assessment of optic nerve function
- Definition, significance and ophthalmoscopic appearance of papilledema
- Major cause and symptoms of optic neuritis (papillitis and retrobulbar neuritis)
- Ophthalmic appearance of major type of optic atrophy

PUPIL

- Nerve supply to the papillary muscles
- Normal response of the pupil to light and accommodation
- Effects of interruptions in the different levels of innervations on papillary reflexes
- Common abnormalities in pupillary responses

VISUAL PATHWAYS AND VISUAL FIELDS

- Normal neural pathway of visual signals
- Understanding of how one side of retina projects to the opposite side of brain
- Interpretation of the location of neural lesions on the basis of visual field defects

ORBIT

- Anatomy of the bony orbit
- Main clinical manifestation of orbital disorders, particularly different types of proptosis
- Causes, management and significance of orbital cellulitis in children
- Proptosis in dysthyroid eye disease and its potential complications

VITAMIN ‘A’ DEFICIENCY

- Functions of vitamin A
- Brief description of vitamin A and the understanding that it is a very common cause of blindness in Pakistan
- Causes of vitamin A deficiency
- The reason why vitamin A deficiency causes night blindness – role of pigment epithelium
- Other manifestations and complications of vitamin A deficiency
- WHO classification of vitamin A deficiency
- Prevention and management of vitamin A deficiency

REFRACTIVE ERRORS

- Normal optics of a healthy eye
- How myopia, hypermetropia, astigmatism, aphakia, and presbyopia occur
- How to manage myopia, hypermetropia, astigmatism, and presbyopia, (general principles)
- Advantages and disadvantages of spectacles, contact lens and refractive surgery
- Basic principles of refractive surgery

SQUINT

- Brief description and function of extra-ocular muscles
- Simple classification of squint
- Principles of management of concomitant squint
- Definition of amblyopia, its causes and principles of management

TRACHOMA

- Definition and pathogenesis of trachoma
- Factors that aid in its spread
- Different stages of the disease and mechanism of production of blindness
- WHO classification
- Prevention and management

LOSS OF VISION

- Definition and standards of low vision/ blindness
- Different mechanisms of acute and chronic loss of vision