

## CURRICULUM FOR THE 2nd SEMESTER

### SEMESTER- 2

S.No	Subject	Credits
1	Anatomy of the Eye	
2	Physiology of the Eye	
3	Islamiyat	
4	English	

### **1: ANATOMY OF THE EYE**

#### **1. Anatomy of the orbit and the ocular adnexa**

- 1.1 The orbit- its position, shape, margins & walls
- 1.2 Important relations of the orbit
- 1.3 Important openings of the orbit
- 1.4 Contents of the orbit
- 1.5 The paranasal sinuses & their clinical significance
- 1.6 Normal structure of the eyelids
- 1.7 Functions of the eyelids
- 1.8 The lacrimal apparatus- structure
- 1.9 Physiology/ functions of the lacrimal system

#### **2. The eyeball**

- 2.1 Important facts concerning the eyeball & its dimensions
- 2.2 Factors responsible for the stability of the eyeball in the orbit
- 2.3 Coverings of the eyeball
- 2.4 Conjunctiva
- 2.5 Blood supply of the eyeball
- 2.6 Lymphatic drainage of the orbit & the ocular adnexa
- 2.7 Nerves of the eye & the orbit

#### **3. Fibrous and the vascular layers of the eyeball**

- 3.1 Basic structure of the cornea
- 3.2 Structure of the sclera
- 3.3 Limbus and the important structures related to it
- 3.4 Anatomy of the uveal tract

#### **4. The lens and chambers of the eye**

- 4.1 Structure of the lens and its capsule
- 4.2 Chambers of the eye

#### **5. Aqueous dynamics**

- 5.1 Synthesis of aqueous
- 5.2 Composition of aqueous
- 5.3 Aqueous outflow

#### **6. Retina and the vitreous**

- 6.1 The layered structure of retina
- 6.2 Important elements in retinal image capturing like the photoreceptors, bipolar & ganglion cells
- 6.3 Structure of the retina as seen by an ophthalmoscope

#### **7. Neuro-ophthalmology and the pupil**

- 7.1 The optic nerve
- 7.2 The visual pathway
- 7.3 Outline of neural pathway for the pupillary reflex
- 7.4 The 3<sup>rd</sup>, 4<sup>th</sup> & 6<sup>th</sup> Cranial nerves
- 7.5 5<sup>th</sup> & the 7<sup>th</sup> cranial nerves

#### **8. Anatomy of Extraocular muscles**

- 8.1 Anatomy of the extraocular muscles; name, origin & insertion
- 8.2 Innervation of the extraocular muscles

## **2: PHYSIOLOGY OF THE EYE**

### **1. Physiology of the orbit and the ocular adnexa**

- 1.1 Functions of the orbit
- 1.2 Functions of the paranasal sinuses
- 1.3 Functions of the eyelids
- 1.4 Physiology of the lacrimal system

### **2. The eyeball**

- 2.1 Functions of the Conjunctiva

### **3. Fibrous and the vascular layers of the eyeball**

- 3.1 Physiology of cornea
- 3.2 Functions of the sclera
- 3.3 Functions of the uvea

### **4. The lens and chambers of the eye**

- 4.1 Basic physiology of the lens
- 4.2 Functions of the Chambers of the eye

### **5. Aqueous dynamics**

- 5.1 Importance of intraocular pressure
- 5.2 Functions of the aqueous

### **6. Retina and the vitreous**

- 6.1 Physiology of the retina
- 6.2 Introduction to photochemistry of vision
- 6.3 Adaptation by the eye

### **7. Neuro-ophthalmology and the pupil**

- 7.1 Physiology of the optic nerve
- 7.2 Physiology of the pupil

### **8. Physiology of Extraocular muscles**

- 8.1 Various types of extraocular movements
- 8.2 Actions of the extraocular muscles
- 8.3 Cardinal positions of gaze

## **3: ISLAMMIYAT**

## **4: ENGLISH**

# CURRICULUM FOR THE 3<sup>rd</sup> SEMESTER

## SEMESTER- 3

S.No	Subject	Credits
1	Common Disease of the Eye	
2	Community Ophthalmology	
3	Public Health	

### 1: DISEASES OF THE EYE

#### 1. Diseases of the Orbit

- 1.1 Common signs and symptoms associated with orbital diseases.
- 1.2 Categories of orbital diseases
  - Infections – orbital cellulitis
  - Space occupying lesions
  - Graves disease
  - Traumatic orbital affections (blowout fracture)

#### 2. Diseases of the eyelids & the lacrimal system

- 2.1 Diseases of the eyelids like:
  - Congenital diseases (ptosis, distichiasis, entropion , coloboma)
  - Abnormalities of the shape and position of eyelids (entropion, ectropion, ptosis)
  - Disease of the lid margins.
    - Sty
    - Blepharitis
    - Disorders of the eyelashes
  - Miscellaneous
    - Chalazion
    - Tumours of the eyelids
      - Benign
      - Malignant
        - Basal cell carcinoma
        - Squamous cell carcinoma
- 2.2 Diseases of the lacrimal system
  - obstructive disorders
  - acute dacrocystitis
  - chronic dacrocystitis

### **3. Diseases of the conjunctiva**

- 3.1 Conjunctivitis; general causes, risk factors and clinical presentation.
- 3.2 bacterial conjunctivitis; specific causes, risk factors clinical presentation, management, public health advise & preventive measures.
- 3.3 Viral conjunctivitis. Specific causes, risk factors clinical presentation, management, public health advise & preventive measures.
- 3.4 Allergic and vernal conjunctivitis. Etiology, aggravating factors and diagnostic clinical features.
- 3.5 Trachoma; epidemiology, characteristic clinical features, staging, complications, trachoma blindness and its prevention
- 3.6 Ophthalmia Neonatorum, aetiology, clinical presentation, complications, management and prevention.
- 3.7 Degenerative conditions of the conjunctiva; names and clinical presentation
- 3.8 Tumors of the conjunctiva, names and clinical presentation.

### **4. Diseases of the Cornea**

- 4.1 Explanation of some general terms; corneal ulcer, corneal abrasion, keratitis, corneal opacity etc.
- 4.2 Risk factors for corneal diseases and the microorganisms causing corneal infections.
- 4.3 Corneal ulcer.
  - Clinical features
  - Individuals predisposed to corneal ulcer.
  - Some specific corneal ulcers like bacterial viral & fungal ulcers
  - Role of primary eye care worker in the management of corneal ulcers.
- 4.4 Xerophthalmia and nutritional corneal ulceration.
- 4.5 Corneal dystrophies. Definition & general presentation
- 4.6 Corneal oedema. Causes and clinical presentation.
- 4.7 Keratoplasty. Definition, common indications & public health education regarding keratoplasty & corneal donations
- 4.8 Diseases of the sclera.
  - Scleritis (definition, clinical features)
  - Episcleritis (definition, clinical features)

### **5. Diseases of the lens**

- 5.1 Epidemiology of Cataract
- 5.2 Causes and classification of cataract. Clinical presentation and complications associated with cataract.
- 5.3 Cataract surgery and its complications.
- 5.4 Health promotion and education strategies for the community regarding prevention of cataract-blindness.
- 5.5 Other diseases of the lens – subluxation and dislocation; other congenital abnormalities

## **6. Diseases of the uvea**

- 6.1 Definition and classification of uveitis.
- 6.2 Causes of Uveitis; infective and non-infective.
- 6.3 Iridocyclitis, clinical presentation and complications.
- 6.4 Choroiditis: definition & clinical presentation.
- 6.5 Intermediate Uveitis; definition & clinical features.
- 6.6 Management of Uveitis; detection & referral guidelines.
- 6.7 Other disease of the uvea; congenital abnormalities (coloboma, aniridia; tumors and degenerative conditions)

## **7. Glaucoma**

- 7.1 Epidemiology; prevalence
- 7.2 Causes and classification
- 7.3 Clinical presentation and outcome.
- 7.4 Management
- 7.5 Health Promotion and Education strategies for preventing glaucoma – related blindness.

## **8. Diseases of the retina and vitreous**

- 8.1 Symptoms of retinal diseases
- 8.2 Types of retinal diseases
- 8.3 Vascular retinopathies; diabetic and Hypertensive.
- 8.4 Retinal detachment
- 8.5 Degenerative disorders retinitis pigmentosa and age- related macular degeneration (ARMD)
- 8.6 Tumors of the retina – Retinoblastoma

## **9. Introduction to neuro-ophthalmology**

- 9.1 Signs and symptoms of optic nerve disease.
- 9.2 Introduction to common disorders of the optic nerve, optic neuritis, optic atrophy, papilloedema
- 9.3 Introduction to diseases of the posterior visual pathways.
- 9.4 3<sup>rd</sup>, 4<sup>th</sup>, and 6<sup>th</sup> cranial nerve disorders .
- 9.5 5<sup>th</sup> and 7<sup>th</sup> nerve disorders. Causes clinical presentation, complications and management by midlevel eye care personnel.

## **10. Disorders of ocular motility & squint**

- 10.1 Causes and types of squint
- 10.2 Basic assessment of squint; corneal reflection test, cover and cover / uncover test, assessment of ocular movements.
- 10.3 Effects of squint in children and adults, and its managements.
- 10.4 Nystagmus; definition and clinical importance of detection and referral
- 10.5 Primary eye care management of ocular deviations; detection and referral criteria

## **11. Ocular & orbital trauma**

- 11.1 Epidemiology of ocular and orbital trauma; prevalence and high-risk groups
- 11.2 Causes and pattern of ocular injuries.
- 11.3 Management of ocular trauma including preventive strategies.
- 11.4 Complications of ocular trauma.

## **12. Overview of infections & tumours of the eye.**

- 12.1 Infections of the eyelids & periocular tissues; herpes zoster ophthalmicus, stye, blepharitis lid abscess etc.
- 12.2 Infections of the lacrimal system; acute and chronic dacryocystitis
- 12.3 Infective conditions of the conjunctiva; bacterifal, Viral & chlamydial conjunctivitis
- 12.4 Ophthalmia neonatorum
- 12.5 Orbital cellulitis
- 12.6 Corneal ulcer
- 12.7 Infective uveitis; endophthalmitis and panophthalmitis
- 12.8 Parasitic diseases of the eye; toxocara, hydatid disease, myiasis, etc.
- 12.9 Leprosy and the eye
- 12.10 Ocular, adnexal & orbital tumours: names, type i.e. whether benign or malignant & clinical presentation

## **13. Ocular emergencies & the management of “Red Eye”**

- 13.1 Pattern of ocular emergencies based on the degree of urgency regarding management i.e.
  - Those demanding management with in minutes (immediate),
  - With in hours (early) &
  - With in days (late).
- 13.2 Patient assessment
- 13.3 Management
  - The triage system
  - The emergency room/corner; basic layout, necessary equipment & supplies
  - First aid for various common emergencies
  - Guidelines for referral
- 13.4 Loss of vision – differential diagnosis and management.
- 13.5 The irritable or painful red eye differential diagnosis and management

## **14. Systemic diseases & the eye- an orientation**

- 14.1 Diabetes and the eye
- 14.2 Hypertension and the eye
- 14.3 Tuberculosis and the eye
- 14.4 AIDS and the eye
- 14.5 Other systemic diseases, rheumatological disease causing Uveitis, other multisystem diseases like sarcoidosis and hematological malignancies

## **15. Childhood blindness**

- 15.1 An Overview
- 15.2 Causes of childhood blindness
- 15.3 Vitamin A deficiency; epidemiology, clinical presentation, treatment & prevention
- 15.4 Corneal ulcers in children; clinical presentation & evaluation, nutritional ulcers, measles and corneal ulceration, herpes simplex infection, use of harmful traditional medicines etc.
- 15.5 Ophthalmia Neonatorum
- 15.6 Congenital cataract
- 15.7 Congenital glaucoma
- 15.8 Retinoblastoma
- 15.9 Childhood trauma & blindness

## **2: COMMUNITY OPHTHALMOLOGY**

- 1. Introduction to epidemiology
- 2. Overview of blindness
- 3. Avoidable and unavoidable blindness
- 4. Primary health care and primary eye care (CEC)
- 5. Screening programmes health education and promotion and community mobilization
- 6. Eye health for special population groups
- 7. Communication skills for health education
- 8. Behavioural sciences (introduction)
- 9. Computer skills for better communication

### **3: PUBLIC HEALTH**

#### **Topics to be covered**

1. Health and health care
  - a) The concept of holistic health
  - b) Prerequisites for health
  - c) Alma Ata Declaration
  - d) Health for All by year 2000
  - e) The concept and principles of public health
  - f) Primary Health Care
    - Definition and concept
    - Basic principles
    - Essential components
    - Levels of prevention
    - The referral system
2. Health promotion
  - a) Definition and concept
  - b) Health promotion action
3. Health education
  - a) Definition and concept
  - b) Role in public health
  - c) Strategies
    - At community level
    - At health care provider level
4. Epidemiology
  - a) Definition
  - b) Uses
  - c) Important epidemiological concepts
    - Magnitude
    - Prevalence
    - Cumulative Incidence
    - Relationship between Prevalence and Incidence
5. Research
  - a) Introduction
  - b) Role of research in public health
6. Community mental health
  - a) Introduction
  - b) Prevention of mental health disorders
7. Professional ethics
  - a) Definition and concept
  - b) Ethics in public health practice

## CURRICULUM FOR THE 4<sup>th</sup> SEMESTER

### SEMESTER- 4

S.No	Subject	Credits
1	Basic Clinical Skills	
2	Advanced Visual Function Assessment	
3	Pak-Studies	
4	English	

## CURRICULUM FOR THE 4<sup>th</sup> SEMESTER

### 1: BASIC CLINICAL SKILLS

#### 1. An overview of the health care services

- 1.1 The health care delivery system- an introduction  
Health care planners, providers, managers & the receivers
- 1.2 The hospital & its various departments
- 1.3 The hospital language
- 1.4 Mannerism
- 1.5 Reception and admissions
- 1.6 Medical documentation and record keeping
- 1.7 Appointments and registration
- 1.8 Subsidiary functions and day- to- day problem/solution activities
- 1.9 Management of hospital data
- 1.10 Eye Care Team & the personnel involved in constituting such a team such as follows:  
Ophthalmologist, Optometrist, Optician, Ophthalmic Allied personnel /MLECP, Ophthalmic specialist nurse, Orthoptist etc

#### 2. History Taking

- 2.1 The outline of history taking: Comprehensive outline of clinical history including all bio- clinical details of the patient like.
  - Personal details
  - History of present illness
  - Information regarding general health
  - Drug history
  - Past history
  - Family history
- 2.2 Commonly met complaints in clinical practice and their interpretation

#### 3. Clinical Examination of the eye

- 3.1 Assessment of visual acuity
- 3.2 Anterior segment examination

- 3.3 Examination of the pupils
- 3.4 Fundus examination
- 3.5 Extraocular movement examination
- 3.6 Visual field examination by confrontation method
- 3.7 IOP check up

#### **4. Clinical documentation & record keeping**

- 4.1 The importance of clinical documentation: It provides retrievable clinical Data of the patient.
- 4.2 Types Of Clinical Documents: clinical history sheets; reports (patient progress reports, death report or report of any other important incidence or event at the clinical station which needs to be reported.); medical certificates and various requisition forms (investigation forms, demand forms etc )
- 4.3 Management of hospital Data: documentation, compilation and storage of hospital data.
- 4.4 The role of computers in the management of hospital data.

#### **5. Basic ophthalmic instruments & their maintenance**

- 5.1 List of basic eye equipment for mid level eye care personnel level 1 (ophthalmic technician) & some selected ophthalmic instruments & equipment
- 5.2 Care of ophthalmic instruments
  - Standard care guidelines
  - Selected office instruments with their standard care protocols & working principle like direct ophthalmoscope, retinoscope, tonometers, lensometer, keratometer, slit lamp, projector of the ophthalmic unit etc
  - Guide lines in case of instrument failure
- 5.3 Care of the ophthalmic lenses ( diagnostic)
  - Standard care guidelines
  - Cleaning non-contact lenses
  - Cleaning contact lenses
  - Additional tips

#### **6. Asepsis & sterilization**

- 6.1 Sterilization and Disinfection; basic concepts & definitions
  - Sterilization
  - Disinfection
  - Spores
  - Antiseptics
  - Disinfectants
  - Germicides
  - Fungicide
  - sporidicide

- virucide
- Sanitizers

6.2 Methods of sterilization and disinfection; with advantages, disadvantages, operative technique & application of each.

- A. Physical methods
- B. Chemical methods

6.3 Sterilization in various practical settings

## **7. Ophthalmic nursing skills**

7.1 Types of patient care: inpatient care ;outpatient care ;operation theatre care and emergency care.

7.2 Principles of inpatient care:

- Patient reception
- Patient admission & registration
- Bed allotment.
- History taking and examination.
- Following special instructions:

Preoperative care:

1. Physical preparation of the patient
2. Mental preparation of the patient
3. Preparation of the clinical documents of the patients
4. Mental preparation of the relatives of the patients.
5. consent
6. special care for certain cases like a diabetic / hypertensive or a cardiac patient
7. Specific preoperative care
  - Preoperative care of a patient with cataract.
  - Preoperative care of a patient with glaucoma.
  - Preoperative care of a patient undergoing squint surgery.
  - Preoperative care of a patient undergoing DCR.
  - Preoperative care of a patient undergoing retinal detachment surgery.
  - Preoperative care of a patient undergoing surgery under - General Anesthesia.
8. Daily ward activities: instillation of eye drops and eye ointments, application of eye pads, recording BP, pulse and temperature, sending for routine investigations etc.
9. Sending investigations; routine investigations (blood/ urine); specific investigations (blood/Conjunctival smears and swabs).
10. Maintaining ward instruments
- 11 Maintenance of asepsis, sterilization & a “safe environment” in the unit.
12. Postop care of patients received from the OT after surgery

### 13. Preparation for discharge

#### 7.3 Operative & Postoperative care in the operation theatre

- Patient reception
- Checking identification of the patient
- Noting and confirming the plan of surgery
- Special instructions
- Preoperative anesthesia and eye drops instillation
- Patient and operating assistant scrubbing
- Assisting the surgeon
- Sterilization of instruments and preparation of various surgical trolleys
- Sending the patient to the inpatient department or home
- Record keeping at the Operation Theatre

#### 7.4 Principles of Outpatient Care

- Special needs of the outpatient department
- Patient assessment
- Assisting in basic or specialized investigations
- Basic outpatient procedures
- Health education and promotion activities
- Outpatient follow up

## **8. Infection control & self-protection in clinical practice**

### 8.1 Common modes of spread of infection in clinical practice

### 8.2 Infection control in clinical practice & the techniques for control such as

- Hand washing and scrubbing
- Use of personal protective materials like gloves, masks, gowns etc
- Appropriate disinfection and sterilization procedures.
- Aseptic techniques: Maintaining the sterility of the equipment after sterilization.
- Special techniques for handling and decontaminating contaminated materials.
- Hygienic practices in potentially infectious situations.

### 8.3 Some important potentially lethal infections – a professional hazard to safeguard

Hepatitis B, C, and AIDS; mode of transmission, common clinical features, complications & safety measures to safeguard against infection transmission & spread. Immunization schedule for hepatitis B

## **9. Summary of the tasks of an ophthalmic technician/ assistant**

### 9.1 Institution-based tasks

- tasks in the outpatient department
- tasks in the ophthalmic operation theater

-tasks in the inpatient department

## 9.2 community-based tasks

- Community screening tasks
- Tasks in assisting organizing & conducting an eye camp or an outreach activity
- Tasks while assisting in conducting community surveys

## **2: ADVANCE VISUAL FUNCTION ASSESSMENT**

### 1. Review of the process of vision & the visual functions

#### **2. Basic optics**

- 2.1 Introduction to the nature of light
- 2.2 The basic properties of light like refraction & reflection

#### **3. Vision & the visual acuity,**

- 3.1 Assessment of visual acuity as part of visual function assessment
- 3.2 Factors affecting visual acuity like environmental factors, faulty technique & diseases of the eye including refractive errors
- 3.3 Review of the technique for distant & near visual acuity assessment & recording
- 3.4 The importance of assessment of visual acuity with pinhole

#### **4. Introduction to refractive errors & their clinical assessment**

- 4.1 Basic optics of emmetropia & ametropia; myopia, Hypermetropia, astigmatism & presbyopia
- 4.2 Clinical assessment of refractive errors- an orientation

#### **5. Management of refractive errors**

- 5.1 The optical prescription
- 5.2 Options for correction of refractive errors; optical correction including contact lenses, surgical correction (lasers and conventional refractive corneal surgery)
- 5.3 Types & uses of corrective lenses
- 5.4 Presbyopia
- 5.5 Aphakia and its associated problems and options for correction

5.6 Pseudophakia

## **6. Basics of binocular vision**

6.1 Development of vision and the critical period

6.2 Advantages of having binocular vision

6.3 Amblyopia definition, common causes & importance of early referral for treatment

## **7. Introduction to low vision**

7.1 Definition

7.2 Psychosocial implications of low vision

7.3 Screening for low vision

7.4 Things to remember while dealing with a patient with low vision

7.5 Examples of some low vision aids & the environmental modifications to improve quality of life of a patient with low vision

## **8. Orientation to advance technical skills**

8.1 Ophthalmic ultrasonography; types, basic uses, assistance at the biometry room.

8.2 Visual field analyzers; manual & automated, brief introduction

8.3 Lasers in ophthalmology; care/ preparation of the patient in the laser room & care of the equipment, safety measures

8.4 Ophthalmic angiography; basic rationale for use & the protocol for assistance at the angiography room.

8.5 The ophthalmic operation theatre & the ophthalmic technician

## **9. Cardiopulmonary resuscitation (CPR)**

9.1 Indications for CPR

9.2 Principles of CPR

9.3 The techniques of CPR

## **3: Pak Studies**

## **4: English**