

# DIPLOMA IN OPTOMETRY WITH OPHTHALMIC TECHNIQUE

## SYLLABUS : Preliminary Course

Sl. No.	Particular
<b>1. Biology and Human Welfare : 2 Lectures</b>	
I	Infectious diseases : General : Causes, control, immunity and chemotherapy
II	Diseases of man : Definition of diseases, different types of pathogens (bacteria, viruses and virus like organisms, fungi, helminthes, protozoa, etc.) sources of infection, infection and contagion, economic importance of diseases, methods of prevention and biological control.
<b>2. Anatomy and Physiology of the Human body : 14 Lectures</b>	
I	Cell structure and function
II	Tissues : Epithelial, Muscular, Connective (cartilage and bone) and nervous
III	Skeletal system
IV	Muscular system
V	Blood
VI	Circulatory system
VII	Digestive system
VIII	Respiratory system
IX	Nervous system
X	Endocrine system
XI	Urinary system
XII	Ear
XIII	Skin
XIV	Nose and Tongue
<b>3. Anatomy of the Eye and Orbit : 15 Lectures</b>	
I	Orbit - its relations and vascular communications
II	Eyelid and its glands
III	Conjunctiva
IV	Lacrimal apparatus
V	Extraocular muscles
VI	Cornea and Sclera
VII	Iris, Ciliary body and choroids
VIII	Retina
IX	Lens and vitreous
X	Optic Nerve and Visual pathway
XI	Cranial nerves III, IV
XII	Cranial nerves V, VI, VII
XIII	Para Sympathetic and sympathetic nerve in relation to the eye
XIV	Pituitary gland and Cavernous sinus
XV	Embryology of the eye
<b>4. Physiology of the Eye : 17 Lectures</b>	
I	Vascular circulation of eye
II	Aqueous humour
III	Intra-ocular pressure
IV	Vitreous
V	Cornea and sclera
VI	Lens
VII	Retina
VIII	Protective mechanism of eye (2 lectures)

IX	Physiology of vision (2 lectures)
X	Light reflex, accommodation and convergence (2 lectures)
XI	Physiology of extraocular muscles
XII	Ocular movements and binocular vision
XIII	Electroretinogram and adaptation
XIV	Visual acuity and testing
<b>5. Ocular Microbiology : 6 Lectures</b>	
I	Ocular microbiology
II	Bacteria
III	Viruses
IV	Fungi
V	Protozoa (Parasites)
VI	Sterilization
<b>6. Ocular Pharmacology : 13 Lectures</b>	
I	General aspects of Pharmacology (3 lectures)
II	Anti-microbials (3 lectures)
III	Anti-inflammatory drugs (2lectures)
IV	Autonomic drugs and anti-glaucoma agents (2 lectures)
V	Drugs for dry eye and diagnostic agents
VI	Ocular anaesthetics
VII	Ophthalmic prescriptions
<b>7. Optics : 21 Lectures</b>	
I	Physical Optics : <ul style="list-style-type: none"> <li>➤ Properties of light</li> <li>➤ Principles of reflection of light</li> <li>➤ Principles of refraction of light</li> <li>➤ Lenses and their combinations</li> </ul>
II	Physiological Optics : <ul style="list-style-type: none"> <li>➤ General concepts of eye as a refracting apparatus</li> <li>➤ The corneal and lenticular systems</li> <li>➤ Optical resolution of the eye</li> <li>➤ Visual angles, visual acuity and visual axes</li> <li>➤ Optical aberrations of the eye</li> </ul>
III	Principles of Ophthalmic Procedures <ul style="list-style-type: none"> <li>➤ Darkroom procedures</li> <li>➤ Ophthalmoscopy</li> <li>➤ Retinoscopy</li> <li>➤ Subjective examination</li> <li>➤ Errors of Refraction</li> <li>➤ Hypermetropia</li> <li>➤ Myopia</li> <li>➤ Astigmatism</li> <li>➤ Refractive surgery</li> <li>➤ Anisometropia and aniseikonia</li> <li>➤ Accommodation</li> <li>➤ Convergence</li> </ul>

<b>8. Mechanical Optics and Workshop : 14 Lectures</b>	
I	Mechanical Optics : <ul style="list-style-type: none"> <li>➤ General power, shape and size of lenses</li> <li>➤ Transposition of spectacle lenses</li> <li>➤ Spherical lenses</li> <li>➤ Cylindrical lenses</li> <li>➤ Bifocals and multifocals</li> <li>➤ Ophthalmic prisms</li> <li>➤ Oblique cylinders</li> <li>➤ Protective and plastic lenses</li> <li>➤ Lens measure : GENEVA</li> <li>➤ Focimeter</li> <li>➤ Special lenses-miscellaneous lenses and appliances</li> </ul>
II	Workshop : <ul style="list-style-type: none"> <li>➤ Grinding machines</li> <li>➤ Grinding materials</li> <li>➤ Tools and gauge and their testing</li> </ul>

## **SYLLABUS**

### **Final Course**

Sl. No.	Particular
<b>9. Practice as an Eye Care Professional : 66 Lectures</b>	
I	Initial patient contact and reception and ethics
II	Office manner, secretarial assistance, records and their retrieval
III	Ophthalmic equipment
IV	Maintenance of ophthalmic equipment
V	Examination of the eye
VI	Special investigations
VII	Routine ophthalmic investigation
VIII	Conjunctival smear, fluorescein staining and pH testing
IX	Colour vision
X	Visual fields
XI	Syringing and lacrimal function tests
XII	Refractometer and focimeter usage
XIII	Tension taking
XIV	Keratometry
XV	Pachometry
XVI	Anaesthesiometry and dark adaptometry
XVII	Exophthalmometry
XVIII	A Scan and B Scan

Sl. No.	Particular
<b>10. Orthoptics, Pleoptics and Muscular Imbalance : 19 Lectures</b>	
I	Normal Binocular function, Grades of Binocular vision, Simultaneous perception, Fusion and Stereopsis
II	Aetiology of strabismus-motor, central and sensory
III	Methods of examination of strabismus, History, visual acuity and cover test a) Ocular movements and their testing b) Measurements of angle of squint c) Testing of Binocular function d) Heterophoria : classification, clinical picture and investigations
IV	Esophoria : Classification, investigation and therapy
V	Exophoria: Classification, investigation and therapy
VI	Hyperphoria and cyclophoria
VII	Abnormalities of binocular vision – diplipic, confusion and suppression
VIII	Abnormal retinal correspondence (1) definition, aetiology and classification, investigation and relative importance
IX	A.C/A ratio : Its importance in congenital squint, methods of testing
X	Congenital squint (Accommodative): Aetiopathogenesis, classification and special investigations
XI	Treatment of accommodative squint; Optical, orthoptic, miotic surgery
XII	Non-accommodative squint : Classification, investigation and treatment
XIII	Divergent squint (1) Classification and clinical picture
XIV	Divergent squint (2) Investigation and treatment
XV	Vertical squint : Aetiology, classification, investigation, differential diagnosis of primary and secondary vertical squints
XVI	Alternating circumduction : Aetiology, classification, clinical picture, investigation and management
XVII	Suppression : Detection and treatment
XVIII	Amblyopia : Definition, aetiology, development, classification, detection and management with occlusion therapy
XIX	After image : Definition, description usage of after images in
XX	Haidinger brushes : Therapy, their usage in diagnosis and therapy
XXI	Pleoptic therapy : Cupper’s method, Bangerter’s method
XXII	Fixation anomalies
XXIII	Indications of orthoptic and surgical treatment of strabismus
XXIV	Postoperative orthoptic management
XXV	Accommodative anomalies
XXVI	Convergence anomalies
XXVII	Nystagmus
<b>11. Nutrition and eye diseases:</b>	
I	Nutritional deficiencies : Vitamins
II	Nutritional deficiencies : Proteins, fat, carbohydrates and minerals
<b>12. Industrial Hazards and their Prevention:</b>	
I	Industrial injuries/accidents and foreign bodies
II	U.V. infrared and other radiation injuries, thermal injuries
<b>13. Community Ophthalmology : (Eye Campus)</b>	
I	Eye screening programmes, school clinics and surveys
II	Blind person and his problems, rehabilitation of the blind
III	Health education in the field of Eye Care Organization of eye camps
IV	Eye donation motivation
<b>14. Lectures on General First-aid, resuscitation and Bandages</b>	

Sl. No.	Particular
<b>15. Common Eye Diseases of :</b>	
I	Eyelids, Orbit, Adnexad, Conjunctiva, Cornea, Sclera, Uvea, Lens, Retina, Glaucoma, Injuries of eye
<b>16. Class on Typing</b>	
<b>17. Computer : 10 Lectures</b>	
I	Introduction to Computer
II	MS-DOS operating system
III	Computer hardware, input output devices, peripherals
IV	Computer software
V	MS-Word
VI	MS-Excel
VII	MS-Power Point
<b>18. Sterilization and theatre : 6 Lectures</b>	
I	General Aspects
II	Sterilization and disinfections
III	Theatre set up
IV	Principles of sterilization – asepsis and antisepsis
V	Eye instruments and operating room equipment
VI	Surgical scrub and donning sterile linen and gloves
<b>19. Pre and Post-operative procedures : 10 Lectures</b>	
I	Preoperative preparation
II	Post operative care, general considerations
III	Surgical preparation and draping
<b>20. Outlines of operative procedures : 10 Lectures</b>	
I	Lids
II	Lacrimal apparatus
III	Extraocular muscles
IV	Cornea
V	Lens
VI	Glaucoma
VII	Eye banking and anucleation
VIII	Trauma
IX	Retina and vitreous
X	Application of lasers
<b>21. Community Ophthalmology : 4 Lectures</b>	
I	Functioning of Mobile Eye Health Care Units including Eye Camps and practical participation in the same guidelines for conducting eye camps. Causes of visual impairment and blindness. National Programme for prevention and control of blindness.

### **PRACTICALS : PRELIMINARY**

- ◆ Reception and registration and record keeping
- ◆ O.P.D. posting
- ◆ Vision and refraction
- ◆ Minor operative techniques
- ◆ Ward posting
- ◆ Workshop making and fitting of glasses

## **PRACTICALS : FINAL**

- ◆ Making and fitting of glasses
- ◆ Refractive errors and their determination
- ◆ Maintenance of ophthalmic equipment
- ◆ Contact Lenses
- ◆ Orthoptic and pleoptics
- ◆ Refractive errors and their determination
- ◆ Theatre – its sterilization and sterilization of ophthalmic and surgical instruments
- ◆ Community ophthalmology and camps
- ◆ Refractive errors and their determination in camps
- ◆ Low visual aids
- ◆ Ocular prosthesis
- ◆ Investigation procedures
- ◆ Optical workshop
- ◆ Refractive errors and their determination
- ◆ Theatre assistance
- ◆ Contact Lense

## **PRACTICAL TRAINING PROGRAMME**

1. Reception/Record Keeping:
  - ◆ Practice as an Eye Care Professional
  
2. Refraction:

• Vision recording-distance/near	500 cases
• Colour vision (Ishihara) recording	50 cases
• Lensometry and vertex refractionometer	500 cases
• Retinoscopy and prescription of glasses	200 cases
• Subjective verification and PMT	300 cases
• Measurement and verification of IPD	300 cases
• Centering and decentering	50 cases
• Transposition of lenses	50 cases
• Auto-refractor	50 cases
  
3. Visual Fields:

• Peripheral & Clinical	20 cases
• Fluorescein angiography	20 cases
• Ultrasonography	20 cases

4. Treatment room and minor surgical procedures:
  - Instillation of drops 100 cases
  - Sub conjunctival injection 50 cases
  - Laying the trolley for minor surgery 25 cases
  - Syringing 100 cases
  - Tonometry (and Tonometer care) 50 cases
  - Epilation 10 cases
  - Corneal-suture removal 10 cases
  
5. Eye OPD : Eye diseases (during Rotational Duty):
  - History taking and recognition of conjunctivitis, corneal ulcer, trichiasis, entropion, cataract, cataract, glaucoma and squint, etc. 100 cases
  
6. Orthoptic Clinic:
  - History taking recording 25 cases
  - Cover test Maddox rod/Maddox wing 10 cases
  - Convergence/accommodation (RAF rule) 10 cases
  - Synaptophore and prism bar orthoptic analysis 50 cases
  - Occlusion treatment 10 cases
  
7. Indoor cases (including record keeping):
  - Blood pressure, urine and smear examination, Laying of Trolley and post-operative, Dressing rotational duty. 100 cases
  
8. Operation Theatre:
  - Preparation of Theatre 5 Times
  - Carbolisation and fumigation 5 Times
  - Autoclaving/sterilization of instruments Swabsticks, linen, pads, drums 5 Times
  - Laying of trolley for surgery (Cataract, Glaucoma, Sac, Squint, etc.) 50 cases
  - Maintenance of O.T. equipments/surgical instruments
  
9. Contact Lens/Prosthesis:
  - Contact Lens fitting 10 cases
  - Prosthesis fitting 10 cases
  - Keratometry 10 cases
  - Biometry 20 cases
  
10. Maintenance of Ophthalmic Equipments/Instruments:
  - Cryo, Operation Table, Operation Microscope, Silt Lamp, Ophthalmoscope, Retinoscope, Keratometer, Auto-refractor, Synaptophore, Perimeters, Trial Sets, Torches, Vitrectomy machine and others.

## **CLINICAL AND PRACTICAL - PRELIMINARY**

- ◆ Attending OPD i.e. dilatation of pupils, etc.
- ◆ Reception
- ◆ Records
- ◆ Minor Operation Techniques
- ◆ Orthoptic – I
- ◆ Ward Posting
- ◆ Pathology

## **CLINICAL AND PRACTICAL - FINAL**

- ◆ Refraction
- ◆ Lens fitting and workshop
- ◆ Investigation
- ◆ OPD
- ◆ Operation Theatre
- ◆ Wards

### Community Ophthalmology and camps:

- ◆ Refractive errors and their determination in hospital and in camps
- ◆ Theatre – Its sterilization and sterilization of Ophthalmic and Surgical instruments in camps
- ◆ Camps – organization and conduction
- ◆ Low visual aids
- ◆ Ocular prosthesis

- ◆ Operation Theatre
- ◆ Salesmanship and optical corner
- ◆ OPD
- ◆ Refractive errors
- ◆ Orthoptic – II
- ◆ Ward