

BHARATHIAR UNIVERSITY
SCHEME OF EXAMINATION (CBCS PATTERN)
M.Sc. Optometry (WITH PROJECT)
(For the CPP/COP students admitted during the academic year **2013-2014** only)

Semester	Study Component	Course Title	Ins.Hrs/ week	Exam			Credit
				CIA	Uni. exam	Total	
I	Paper I	Medical Records	5	25	75	100	4
I	Paper II	Low Vision Rehabilitation	5	25	75	100	4
I	Practical I	Special Clinic I	5	40	60	100	4
I	Elective	Elective Paper I	5	25	75	100	4
I	Paper III	Clinical Optics	5	25	75	100	4
II	Paper IV	Orthoptics & Vision Therapy	5	25	75	100	4
II	Paper V	Clinical Optometry - I	5	25	75	100	4
II	Paper VI	Advanced Contact Lens - I	5	25	75	100	4
II	Practical II	Special Clinic II	5	40	60	100	4
II	Elective	Elective Paper II	5	25	75	100	4
III	Paper VII	Clinical Optometry - II	5	25	75	100	4
III	Paper VIII	Advanced Contact Lens – II	5	25	75	100	4
III	Paper IX	Advanced Glaucoma - I	5	25	75	100	4
III	Practical III-	Special Clinic III	5	40	60	100	4
III	Elective	Elective Paper III	5	25	75	100	4
IV	Paper X	Clinical Optometry - III	4	25	75	100	4
IV	Paper XI	Ophthalmic Imaging	4	25	75	100	4
	Paper XII	Advanced Glaucoma - II	4	25	75	100	4
IV	Practical VI	Special Clinic IV	5	40	60	100	4
IV	Project		17	-	-	250	10
IV	Elective	Elective Paper IV	4	25	75	100	4
		<i>Total</i>				2250	90

<i>List of Elective papers (Colleges can choose any one of the paper as electives)</i>	
<i>Elective – I</i>	<i>1. Eye Banking 2. Clinical Psychology</i>
<i>Elective – II</i>	<i>1. Epidemiology 2. First Aid</i>
<i>Elective – III</i>	<i>1. Sports Vision 2. Law & Optometry</i>
<i>Elective - IV</i>	<i>1. Refractive Surgeries 2. Community Optometry</i>

Paper I: Medical Records

Unit I

Introduction to medical records- Definition, purpose, function of medical records

History- Classification of medical records

Need for medical record,

Responsibility for the medical record, organization, Quality

Unit II

Content of medical records – importance of medical records, purpose of medical records

Special records – medico legal records

Formats- types of formatting,

Advantages & Disadvantages, format for medical record

Unit III

Forms design and control;

Filing methods – Types- merits & Demerits

Storage and retention – Need, Microfilming, Measures for preservation of medical records,

Long –term Care

Unit IV

Nomenclatures and classification systems;

Indexes and registers;

Legal aspects of medical records- Insurance cases, Workman’s compensation cases, Malpractice suits, will cases, certificate of birth & death, Criminal Cases, Documentation of Medical records.

Unit V

Quality assurance – importance, problems of incomplete record, How to overcome the deficiencies, Quality assurance with latest technologies, Quality assurance plan

Electronic Medical Record – Need, Uses, Advantages & disadvantages

Recent advances in medical records system

ICD – Inter National Classification of diseases- History, Design, Structure, Difference between ICD 9 & ICD 10, How to use ICD? , Coding guidelines, other ICD classifications, Principles & rules of coding, Amendments to the ICD – 10.

Coding – Structure of codes, volume of codes, Structural change

Text Book:

1. *Medical Record Organization and management : Mogli GD ,Jaypee , January 1, 2006*
2. *Electronic medical records :a guide for clinicians and administrators : Jerome H. Carter*
3. *ICD-9-CM Coding hand book : Faye Brown, Nelly Leon-Chisen*
4. *Medical records and the law by William H. Roach Jr. (Apr 18, 2006)*

Paper II: Low Vision Rehabilitation

Unit I

Visual Disorders – Medical Perspective

- a. *The Epidemiology of Vision Impairment*
- b. *Vision Impairment in the pediatric population*
- c. *Ocular Diseases :*
 - i. *Age – Related Cataract,*
 - ii. *Glaucoma*
 - iii. *ARMD*
 - iv. *Diabetic retinopathy*
 - v. *Corneal Disorders*
 - vi. *Ocular Trauma*
 - vii. *Sensory Neuro-ophthalmology and Vision Impairment*
 - viii. *Refractive Disorders*

Visual Disorders – The Functional Perspective

- d. *Low Vision and Psychophysics*
- e. *Visual Functioning in Pediatric Populations with Low Vision*
- f. *Perceptual correlates of Optical Disorders*
- g. *Functional aspects of Neural Visual Disorders of the eye and Brain*
- h. *Visual Disorders and Performance of specific Tasks requiring vision*

Visual Disorders – The Psychosocial Perspective

- i. *Developmental perspectives – Youth*
- j. *Vision Impairment and Cognition*
- k. *Spatial orientation and Mobility of people with vision impairments*
- l. *Social skills Issues in vision impairment*
- m. *Communication and language : Issues and concerns*
- n. *Developmental perspectives on Aging and vision loss*
- o. *Vision and cognitive Functioning in old age*

Unit II

Interactions of Vision Impairment with other Disabilities and sensory Impairments.

- a. *Children with Multiple Impairments*
- b. *Dual Vision and Hearing Impairment*
- c. *Diabetes Mellitus and Vision Impairment*
- d. *Vision Problems associated with Multiple Sclerosis*
- e. *Vision Impairment related to Acquired Brain Injury*
- f. *Vision and Dementia*
- g. *Low Vision and HIV infection*

The Environment and Vision Impairment: Towards Universal Design

- h. *Indian Disabilities act*
- i. *Children's Environments*
- j. *Environments of Older people*
- k. *Outdoor environments*
- l. *Lighting to enhance visual capabilities*
- m. *Signage and way finding*
- n. *Accessible Environments through Technology*

Unit III

Vision Rehabilitation:

- a. *In Western Countries*
 - b. *In Asia*
 - c. *Personnel preparation in Vision Rehabilitation*
- Psychological and social factors in visual Adaptation and Rehabilitation*
- d. *The Role of psychosocial Factors in adaptation to vision Impairment and Habilitation outcomes for Children and Youth*
 - e. *The Role of psychosocial Factors in adaptation to vision Impairment and Habilitation outcomes for Adults and Older adults*
 - f. *Social support and adjustment to vision Impairment across the life span*
 - g. *The person – Environment perspective of vision impairment*
 - h. *Associated Depression, Disability and rehabilitation*
 - i. *Methodological strategies and issues in social research on vision Impairment and rehabilitation*

Unit IV

- a) *Habilitation of Children and Youth with vision Impairment*
- b) *Rehabilitation of working –age Adults with Vision Impairment*
- c) *Rehabilitation of older Adults with Vision Impairment*
- d) *Functional consequences of vision Impairment*
- e) *Vision evaluation of Infants*
- f) *Educational assessment of visual function in Infants and Children*
- g) *Functional Evaluation of the Adult*
- h) *Functional orientation and Mobility*
- i) *Functional Assessment of Low Vision for Activities of Daily living*

Unit V

- a) *Psychosocial assessment of adults with vision impairment*
- b) *Assistive Devices and Technology for Low Vision*
- c) *Assistive Devices and Technology for Blind*
- d) *Vision and Reading - Normals Vs Low Vision*
- e) *Clinical Implications of color vision Deficiencies*
- f) *Electro diagnosis in evaluating and managing the low vision patient*

Text books:

1. *Christine Dickinson: Low Vision: Principles and Practice Low vision care, 4th edition, Butterworth-Heinemann, 1998*
2. *E Vaithilingam: practice of Low vision – A guide book, Medical Research Foundation, 2000.*
3. *A J Jackson, J S Wolffsohn: Low Vision Manual, Butterworth Heinnemann, 2007*

Paper III: CLINICAL OPTICS

Unit 1

Review of Optics

Illumination, Transmission and Absorption of light, Laser Fundamentals, Pinhole Imaging, Image Magnification, photometry and Radiometry

Refraction and Reflection at Curved Surfaces, Fermat's Principle, Stigmatic Imaging of refracting Surface.

First Order Optics – Ignoring image quality, Paraxial Approximation, Small angle approximation.

Lens Maker's Equation, Knapp's law, Lens Combinations, Afocal System, Transposition of Lens, Combining Cylinders at Oblique Axis

Unit 2

Optics of the Human Eye

The Development of Optical System of the Eye, The human Eye as Optical System, Schematic Eyes, Important Axes of the Eye, Pupil Size and its Effect on Visual Resolution, Visual Acuity, Contrast Sensitivity Functions, Color vision, Epidemiology of Refractive Error, Developmental Myopia, Developmental Hyperopia, Prevention of Refractive Errors.

Unit 3

Advanced Clinical Refraction

Spherical Correcting Lens and Far point concept, Cylindrical correcting lens and far point concept Astigmatic Dial, Crossed Cylinders, Effectively of Lens, Effect of Spectacle and Contact Lens on Accommodation and Convergence,

Refraction for pre verbal children, Prescribing for Children, Guidelines for prescribing Cylinders, Aphakic and Pseudophakic Refraction, Special Retinoscopy

Refraction and Prescription in Anisometropia and Anisokonia, Special Lenses, Isokonic Lenses, Clinical Accommodative Problems, Dynamic Retinoscopy, AC/A Ratio

Unit 4

Intra Ocular Lenses

Types of IOL's – Anterior Chamber Lenses, Posterior Chamber Lenses

Optical Consideration of IOL's – Image Magnification, IOL power Selection, Piggyback IOL, IOL power after Refractive Surgery.

Lens Related Visual Disturbances, Non Spherical Optics, IOL Standards

Multifocal IOL's – Types of Multifocal IOLs, Clinical Result of Multifocal IOLs, Accommodating IOLs

Unit 5

Lens Power and Thickness Considerations

Positional Lens Power Problems, Effective Power as Related to vertex distance change.

Vergence of light as it travels through a lens, vergence of light striking the second surface of a thick lens, Calculating front and back vertex powers

Lens Design – Aberrations, Spectacle lens design, Form of lenses, appropriate base curve, Manufacture's recommendations, factors that modify base curve choice,

Best form of lens, Aspheric Lens, Atoric Lens, Working with Aspheric and Atoric, Prescribing Guidelines of Multifocal Lens, Dispensing of Progressive Lens, Progressive lens troubleshooting

REFERENCES:

1. *Basic and Clinical Science Course-Clinical Optics – American Academy of Ophthalmology 2006-2007*
2. *System for Ophthalmic Dispensing: Clifford W Brooks, 3rd Edition, Butterworth Heinemann*

Paper IV: ORTHOPTICS AND VISION THERAPY

Unit I

*Nonstrabismic Binocular Vision Anomalies, Convergence insufficiency, Convergence excess, Fusional vergence dysfunction. Functional Ocular Motor Dysfunction
Disorders of accommodation – Accommodative dysfunction*

Unit II

*Esodeviations – Infantile Esotropia, Accommodative Esotropia, Acute Acquired comitant Esotropia, Cyclic Esotropia, Microtropia, Divergence Insufficiency. Exodeviations – Exotropia of the divergence Excess type, Infantile/Congenital Exotropia, Sensory Strabismus, Consecutive Exotropia.
Mechanically restrictive strabismus, Duane Retraction Syndrome, Browns Syndrome, Thyroid – related Ophthalmopathy.*

Unit III

*Paralytic Strabismus – Unilateral Superior Oblique palsy, Abducens Nerve (CN VI) palsy, Ocular Motor Nerve (CN III), Abducens Nerve (CN VI) palsy, Ocular Motor Nerve (CN III).
Horizontal gaze disturbances – Internuclear Ophthalmoplegia and one and a half Syndrome, Congenital Ocular Motor Apraxia, Acquired ocular Motor Apraxia (Balint's Syndrome)
Vertical gaze disturbances – Vertical Gaze palsy (Steele – Richardson Olszewski Syndrome), Dorsal Midbrain Syndrome (Parinaud's Syndrome). ocular myasthenia gravis, amblyopia*

Unit IV

Diagnostic techniques – Monocular / binocular Fixation Pattern, Bruckner Test, Maddox Rod Scale (Modified Thorington) Hirschberg / Krimsky test, step Vergence Testing, Vergence Facility, Monocular Estimation Method, Accommodative Facility, NSUCO Ocular Motor Test (The Maples), Developmental Eye movement test, parks Three- step test, Prism adaption test, Visuoscopy, four Base – out test, Cycloplegic Refraction, Delayed subjective Refraction, Double Maddox Rod.

Unit V

Primary care diagnosis and vision therapy for non-strabismus binocular vision disorders – three order binocular work up for near point, Non – Strabismic Binocular Vision Disorders, general Vision therapy program for the primary care Optometrist, Vision Therapy Techniques.

Text Book:

- *Erik M. Weissberg: Essentials of clinical binocular vision February 2004 Elsevier Health Sciences*
- *Scheiman, Mitchell and Wick, Bruce. Clinical Management of Binocular Vision. 2nd ed. Philadelphia: Lippincott, Williams & Wilkins, 2002.*
- *Griffin, John R. Binocular Anomalies: Diagnosis and Vision Therapy. 4th ed. Boston: Butterworth-Heinemann, 2002.*
- *VonNoorden, Gunter K. Binocular Vision and Ocular Motility: Theory and Management Of Strabismus. 6th ed. St. Louis: Mosby, 2001.*

Paper V: Clinical Optometry - I

Unit I

Diseases of lids

Eye Lids – Blepharitis, External Hordeolum (Stye), Chalazion, Internal Hordeolum, Molluscum Contagiosum

Eye Lash Disorders – Trichiasis, Psudotrichiasis, Distichiasis, Madarosis

Anomalies in the position of Lid Margins- Entropion, Ectropion, Symblepharon, Ankyloblepharon, Blepharophimosis, Lagophthalmos, Blepharospasm, Ptosis

TUMOURS, INJURIES

Unit II

Diseases of orbit - PROPTOSIS, ENOPHTHALMOS, DEVELOPMENTAL ANOMALIES OF THE ORBIT, ORBITAL INFLAMMATIONS-Preseptal cellulitis, Orbital cellulitis and intraorbital abscess, Orbital mucormycosis, Orbital periostitis, Cavernous sinus thrombosis, Specific chronic orbital inflammations, Idiopathic orbital inflammatory disease GRAVES' OPHTHALMOPATHY-Thyrotoxic exophthalmos, Thyrotropic exophthalmos ORBITAL TUMOURS, BLOW-OUT FRACTURES, ORBITAL SURGERY – Orbitotomy, Exenteration

Unit III

Diseases of Lacrimal Apparatus – DACRYOCYSTITIS, Congenital, Chronic dacryocystitis, Acute dacryocystitis, Surgical technique of DCR and DCT SWELLINGS OF THE LACRIMAL GLAND- Dacryoadenitis, Mickulicz's syndrome, Dacryops, Tumours

Unit IV

Diseases of Conjunctiva

INFLAMMATIONS OF CONJUNCTIVA - Infective conjunctivitis, Bacterial, Chlamydial, Viral, Allergic conjunctivitis, Granulomatous conjunctivitis

DEGENERATIVE CONDITIONS – Pinguecula, Pterygium, Concretions

SYMPTOMATIC CONDITIONS – Hyperaemia, Chemosis, Ecchymosis, Xerosis, Discoloration

CYSTS AND TUMOURS, Cysts of conjunctiva, Tumours of conjunctiva

Unit V

Dry eyes

THE TEAR FILM

THE DRY EYE

Sjogren's syndrome

THE WATERING EYE - Etiology, Clinical evaluation

Text Book:

1. Stephen J. Miller : *Parsons Diseases of the Eye*, 18th edition, Churchill Livingstone, 1990
2. *Comprehensive Ophthalmology*: AK Khurana 3rd Edition

Paper VI: Advanced Contact Lens – I

Unit I

History of contact lenses

Current concepts in anatomy and Physiology of the cornea and tear film

Microbiology and Immunology in relation to Contact Lens wear Vision and Optics with Contact Lenses

Corneal Topography measurement

Use of Slit Lamp in Contact Lens Practice

Unit II

Correlation of illumination with conditioning observed Pharmacology of Contact Lens solutions

Review of Contact Lens solution contents

The effects of wear on Contact Lenses

Contact Lens wears in dry eye

Unit III

Soft Contact Lens EW complications

Causes and management

Rigid vs permeable

EW complications: Clinical management

Keratoconus; Overview and contact lens fitting

Unit IV

Contact lens for children

Contact Lenses for aphakics

Contact Lenses for Pseudo Aphakics

Contact Lenses in post refractive surgery/PRK

Unit V

Lens choice for astigmatism

Soft Contact Lens Design

R.G.P. Lens modification

Contact Lenses and Driving

Bandage Lenses-Assessment of deposits/micro organisms.

Text books:

- *IACLE modules 1 - 10*
- *CLAO Volumes 1, 2, 3*
- *Anthony J. Phillips : Contact Lenses, 5th edition, Butterworth-Heinemann, 2006*
- *Elisabeth A. W. Millis: Medical Contact Lens Practice, Butterworth-Heinemann, 2004*
- *E S. Bennett ,V A Henry :Clinical manual of Contact Lenses, 3rd edition, Lippincott Williams and Wilkins, 2008*

PAPER VII: CLINICAL OPTOMETRY – II

Unit-I

CATARACT - Congenital and developmental cataract, Acquired cataract, Management of cataract
SURGICAL TECHNIQUES FOR CATARACT EXTRACTION, Intracapsular cataract extraction, Conventional extracapsular cataract
Extraction, Manual small incision cataract surgery, Phacoemulsification, Surgical techniques of extracapsular cataract extraction for childhood cataract, Intraocular lens implantation, Complications of cataract surgery and their management
DISPLACEMENTS OF THE LENS-Subluxation, Dislocation
CONGENITAL ANOMALIES OF THE LENS

Unit-II

Cornea - CONGENITAL ANOMALIES
INFLAMMATIONS OF THE CORNEA-Ulcerative keratitis, Non-ulcerative keratitis, Superficial, Deep
CORNEAL DEGENERATIONS-Age-related corneal degenerations, Pathological corneal degenerations
CORNEAL DYSTROPHIES-Anterior dystrophies, Stromal dystrophies, Posterior dystrophies
Ectatic conditions of cornea- Keratoconus, Keratoglobus, Keratoconus posterior
ABNORMALITIES OF CORNEAL TRANSPARENCY - Corneal edema, Corneal opacity, Corneal vascularisation
KERATOPLASTY

Unit-III

INFLAMMATIONS OF THE SCLERA
Episcleritis, Scleriti, Anterior, Posterior
BLUE SCLERA
STAPHYLOMAS – Anterior, Intercalary
Ciliary-Equatorial, Posterior

Unit-IV

CONGENITAL ANOMALIES
INFLAMMATIONS (UVEITIS)-General considerations, Anterior uveitis, Posterior uveitis, Endophthalmitis and Panophthalmitis, Specific clinico-etiological types of uveitis
DEGENERATIVE CONDITION - of iris, of choroid
TUMOUR - of choroid, of ciliary body, of iris

Unit-V

BINOCULAR SINGLE VISION
STRABISMUS - Definition and classification, Evaluation of a case, Pseudostrabismus, Heterophoria, Heterotropia, Concomitant strabismus, Incomitant strabismus, Strabismus surgery
NYSTAGMUS- Physiological, Sensory deprivation, Motor imbalance

Text Books:

- a. *Stephen J. Miller : Parsons Diseases of the Eye, 18th edition, Churchill Livingstone, 1990*
- b. *Comprehensive Ophthalmology: AK Khurana 3rd Edition*

Paper VIII: Advanced Contact Lens – II

Unit I

Appearance of Contact Lenses

Pre and Post cleaning

Calculation of DK/L

EOP and oedema

Measurements of corneal swelling with the Phachometer

Unit II

Measurement of the Oxygen needs of the eye or needs and contact lens transmissibility

The effect of materials and deposits of DK/L

Silicone hydrogel contact lenses

The effect of hypoxia on corneal structure

Unit III

Soft wearing schedules DW Vs EW

Bifocal Contact Lens fitting and assessment

Toric SCL Lenses

Toric RGP Lenses

Therapeutic contact lenses & maintenances

Unit IV

Advancements in Contact Lens instrumentation and techniques Visual recognition of conditions and problem solving

Corneal prosthesis

Special applications of Contact Lens in Research and Industry

Occupation Vs Contact lenses

Unit V

Future trends in industry, R & D and marketing for Contact Lenses and associated product

Vision correction by refractive surgery, Ortho teratology & reverse geometrical contact lenses etc

Scleral fitting contact lenses

Advanced study of Contact Lens research methods and analysis of Contact Lens literature and data basis.

Text books:

- *IACLE modules 1 - 10*
- *CLAO Volumes 1, 2, 3*
- *Anthony J. Phillips : Contact Lenses, 5th edition, Butterworth-Heinemann, 2006*
- *Elisabeth A. W. Millis: Medical Contact Lens Practice, Butterworth-Heinemann, 2004*
- *E S. Bennett , V A Henry :Clinical manual of Contact Lenses, 3rd edition, Lippincott Williams and Wilkins, 2008*

Paper IX: ADVANCED GLAUCOMA-I**Unit-I**

Cellular and Molecular Biology of Aqueous Humor Dynamics

Biology of Aqueous humor inflow- Cellular organization of ciliary body and ciliary process, Ciliary body muscles, ciliary body vessels, ciliary processes, Innervation of ciliary body Mechanism and regulations of aqueous humor production, Function and composition of Aqueous humor

Aqueous humor outflow- Trabecular pathway and Uveoscleral pathway

Unit-II

Intra Ocular Pressure and Tonometry

Intra Ocular Pressure, Introduction, Factors affecting, Physiology

Tonometers and Tonometry – Classification of tonometers, Indentation, Applanation, Non Contact, Miscellaneous tonometers, Comparison of Tonometers.

Tonometry for Special Clinical Circumstances – Tonometry over contact lens, tonometry with gas filled eyes, Tonometry Flat Anterior Chamber, Tonometry in eyes with Keratoprosthesis,

Unit-III

Gonioscopy and Other Techniques - Historical Background, Principle of Gonioscopy, Direct and Indirect Gonioscopy.

Gonioscopic Appearance of normal Anterior Chamber, Recording Gonioscopic Finding.

Cycloscopy – High resolution ultrasound bio microscope, Optical Coherence Topography of the anterior segment.

Aqueous humor dynamics, Fluorophotometry, Tonography, Measurement of episcleral venous pressure.

Unit-IV

Optic Nerve, Retina and Choroid

Anatomy and histology, Embryology of Retina and Optic Nerve.

Pathophysiology of glaucomatous optic nerve damage, Clinical Appearance of Optic Nerve head, Glaucomatous optic atrophy, Advanced glaucomatous cupping, Peripapillary changes associated with Glaucomatous Optic Atrophy, Differential Diagnosis of Glaucomatous optic atrophy.

Evaluation echnics – Office evaluation and recording, Photographic Technique, Ultrasonography.

Unit-V

Classification of Glaucomas

Classification Based on Etiology - Stages of Glaucoma, Chronic Open angle glaucoma, pupillary Block Glaucoma, Developmental Anomalies of the anterior chamber

Classification based on Mechanism – Open Angle Closed Angle, Developmental Anomalies of the anterior chamber

Text BooK

- a) *Schild's : Text book of glaucoma , Karim F. Damji, Sharon Freedman, Sayoko E. Moroi and Douglas J. Rhee MD Sixth edition (Nov 1, 2010)*
- b) *Becker Shaffer's: Diagnosis and Therapy of the Glaucoma , Mosby; 8 edition ,18 June 2009*

Paper X: CLINICAL OPTOMETRY-III

Unit-I

Disease of Retina-

CONGENITAL AND DEVELOPMENTAL DISORDERS

TRAUMATIC LESIONS

INFLAMMATORY DISORDERS- Retinitis, Periphlebitis retinae

VASCULAR DISORDERS- Retinal artery occlusions, Retinal vein occlusions, Diabetic retinopathy, Hypertensive retinopathy, Sickle cell retinopathy, Retinopathy of prematurity, Retinal telangiectasias, Ocular ischaemic syndrome

DYSTROPHIES AND DEGENERATIONS

MACULAR DISORDERS

RETINAL DETACHMENT

TUMOURS

Unit II

VITREOUS LIQUEFACTION

VITREOUS DETACHMENT

VITREOUS OPACITIES – Developmental, Inflammatory, With liquefaction, Amyloid degeneration, Asteroid hyalosis, Synchysis scintillans, Red cell opacities, Tumour cell opacities

VITREOUS HAEMORRHAGE

VITRECTOMY-Open sky vitrectomy, Pars plana vitrectomy, Vitreous substitutes

Unit III

Disease of Optic nerve,

LESIONS OF THE VISUAL PATHWAY

PUPILLARY REFLEXES AND THEIR

ABNORMALITIES

DISEASES OF THE OPTIC NERVE-Congenital anomalies, Optic neuritis, Anterior ischaemic optic neuropathy, Papilloedema, Optic atrophy, Tumors
SYMPTOMATIC DISTURBANCES OF VISION-Night blindness, Day blindness, Color blindness, Amaurosis, Amblyopia, Cortical blindness, Malingering, Hysterical blindness, Disorders of higher visual functions
OCULAR MANIFESTATIONS OF DISEASES OF CENTRAL NERVOUS SYSTEM
Infections, Aneurysms, Intracranial hemorrhages, Demyelinating diseases, Head injury

Unit IV

OCULAR THERAPEUTICS-Modes of administration, Antibacterial agents, Antiviral drugs, Ocular antifungal agents, Mydriatics and cycloplegics, Antiglaucoma drugs, Corticosteroids, Nonsteroidal anti-inflammatory drugs, Viscoelastic substances
LASERS-Production of laser beam, Mechanisms of laser effects and their therapeutic applications
CRYOTHERAPY IN OPHTHALMOLOGY-Principle, Mode of action, Uses

Unit V

OCULAR MANIFESTATIONS OF SYSTEMIC DISEASES-Introduction, Nutritional deficiencies, Xerophthalmia, Systemic infections, metabolic disorders, Disorders of skin and mucous membranes, Haematological diseases
OCULAR ABNORMALITIES IN TRISOMIES
ADVERSE OCULAR EFFECTS OF COMMON SYSTEMIC DRUGS

Text Books:

1. Stephen J. Miller : *Parsons Diseases of the Eye*, 18th edition, Churchill Livingstone, 1990
2. Jack J. Kanski *Clinical Ophthalmology: A Systematic Approach*, 6th edition, Butterworth - Heinemann, 2007
3. *Comprehensive Ophthalmology*: AK Khurana 3rd Edition

Paper XI: Ophthalmic Imaging

Principle, Instrumentation, Illumination Techniques, Special Procedures, Uses for the following.

Unit I

Hardware , Software in Ophthalmic Imaging,
External photography of the eye,
Macro photography,
Corneal Topography,
pentacam,
Aberrometry.

Unit II

*Slit lamp,
OCT,
HRT.*

Unit III

*Photograph of the angle of anterior chamber,
Ophthalmic Ultrasound,
GDx,
Ultra Sonography,
Confocal Microscopy,*

Unit IV

*Fundus photography by conventional and infrared imaging systems,
Pan fundusopic Lenses,
Indirect, Direct Ophthalmoscope,
Fluoresce in photography,
Mydriatic and non mydriatic fundus cameras.*

Unit V

*Computerized tomography,
Magnetic Resonance Imaging,
Methods of image enhancement,
Advance Ophthalmic Imaging – Glaucoma, Retina.*

Text Book:

- 1. James Wolffsohn : Eye Essentials Ophthalmic Imaging , James Wolffsohn BSc PhD MCOptom, Sandip Doshi PhD MCOptom and William Harvey MCOptom (27 March 2008)*
- 2. Roger Steinert MD, David Huang : Anterior Segment Optical Coherence Tomography Roger Steinert MD and David Huang MD PhD (Jan 4, 2008)*
- 3. Mark Brezinski, : Optical Coherence Tomography: Principles and Applications (25 August 2006)*
- 4. Wavefront analysis aberrometers and corneal topography Benjamin F. Boyd Amar Agarwal Jorge Alio Ronald Krueger Steven E. Wilson*
- 5. Arun D.sing :Ophthalmologic Ultrasound, An Issue of Ultrasound Clinics,vol 3*

Paper XII: ADVANCED GLAUCOMA-II

Unit-I

Assessment of Visual Field

Normal Visual Field, Visual field loss in glaucoma.

Advanced Glaucomatous field defects, Visual field changes in normal tension glaucoma, Correlation between optic nerve head and visual field defects.

Basic Principles of Visual Field Testing, Techniques and instruments for measuring the field of vision, HFA, Interpreting the results and analyzing the progression, Glaucoma hemi field test, Other types of Perimetry, Manual Perimetry.

Glaucomatos influence on Visual Field

Unit-II

Normal Tension Glaucoma – Terminology, Epidemiology, Clinical Differences between NTG and COAG, Differential diagnosis of NTG,

Mechanism of COAG, Mechanism of Obstruction and aqueous outflow, Influence of Aqueous humor, Alteration of the trabecular meshwork, Stress response markers, Corticosteroid sensitivity, Relationship of Intra Ocular pressure and Corticosteroid sensitivity

Mechanism of Optic Neuropathy, Management of NTG

Unit-III

Pupillary Block Glaucoma

Primary Vs secondary angle closure glaucoma, Acute, Sub acute and Chronic ACG

Clinical Features and findings, Newer techniques, Clinical findings during and Acute attack.

Theories of Mechanism – Relative pupillary block, Anatomical Factor, Significance of pupillary dilatation, Chronic angle closure glaucoma, Plateau Iris.

Differential Diagnosis, Management

Unit-IV

Childhood Glaucoma – Classifications, Signs and symptoms of Glaucoma in Childhood, Differential Diagnosis, Diagnostic Examinations

Childhood glaucoma Clinical Presentation, Primary Congenital Glaucoma, Etiology, Features and Management

Developmental Glaucoma – Classifications and Features

Other Syndromes associated with Glaucoma.

Exfoliation Syndrome and Exfoliative Glaucoma

Pigmentary Glaucoma, Steroid Induced Glaucoma

Unit-V

Principle of Medical therapy and Management

Gathering evidences to evaluate the patient, Approach to the patient with glaucoma, Treatment Plan, Establishing the target pressure, Pharmacokinetics.

Glaucoma medications – Prostaglandins, beta blockers, Carbonic Anhydrase inhibitors, Miotic Agents.

Principles of Laser Surgery for Glaucoma – Basic principles of Laser, Laser induced tissue interactions, Specific lasers for glaucoma surgery

Filtering surgery – Mechanisms of filtering action, Basics techniques of filtering surgery, Trabeculectomy

Text Book

1. *Schild's : Text book of glaucoma , Karim F. Damji, Sharon Freedman, Sayoko E. Moroi and Douglas J. Rhee MD Sixth edition (Nov 1, 2010)*
2. *Becker Shaffer's: Diagnosis and Therapy of the Glaucoma , Mosby; 8 edition ,18 June 2009*

Practicals

First Year - First Semester

Special Clinic 1 - Low Vision Clinic

- 1) *Low vision clinics*
- 2) *Evaluation of Low Vision*
- 3) *Management of different Low visions*
- 4) *Spastic children evaluation*
- 5) *Low vision screening camp*
- 6) *Integrated/Inclusive/Special school posting for a week period.*
- 7) *Case report – submitting and presentations*

First Year – Second Semester

Special Clinic 2 – General, Cataract & Cornea Clinic

1. *General Evaluation and Work up*
2. *Anterior Segment Evaluation*
3. *Ocular Emergency Management*
4. *Applanation Tonometry*
5. *Gonioscopy*
6. *Fundus Evaluation using Direct Ophthalmoscope, Indirect Ophthalmoscope and Slitlamp*
7. *Posting in General Ophthalmology, Cataract and Cornea Clinic one month each.*
8. *Case report – submitting and presentations*

Second Year – Third Semester

Special Clinic 3 – Contact Lens Clinic

- 1) *Rigid Contact lens fitting in Simple refractive errors*
- 2) *Soft contact lens fitting in Simple Refractive errors*
- 3) *Bifocal fitting*
- 4) *Scleral contact lens fitting*
- 5) *Orthokeratology*
- 6) *Postrefractive surgery*
- 7) *Postkeratoplasty fitting*
- 8) *Abnormal cornea*
- 9) *Cosmetic contact lens*
- 10) *Bandage lens fitting*
- 11) *Case report – submitting and presentations*

Second Year – Fourth Semester

Special Clinic 4 – Retina & Vitreous Clinic

- 1) *Retina evaluation using indirect ophthalmoscope*
- 2) *Retinal Imaging*
- 3) *Fundus Fluorescein Angiography*
- 4) *B Scan evaluation*
- 5) *Tomogram Evaluation*
- 6) *Posting in Retina clinic*
- 7) *Case report – submitting and presentations*

Elective Papers
Elective- I
Paper 1 : Eye Banking

Unit I

*Introduction to Eye Banking,
History & milestones,
Requirements in eye bank,*

Unit II

*Duties and responsibilities of eye bank personals,
Indications and contra indications eye donation
Instrumentation in eye banking*

Unit III

*Pre operative evaluation for collecting eye ball
Enucleation
Tissue retrieval,
Handling of tissue,
preservation techniques,*

Unit IV

*Evaluation techniques,
specular microscopy,*

Unit V

*Legal aspects in organ transplantation,
Types keratoplasties,
Advanced keratoplasties
Corneal prosthesis*

Text Book:

- 1. Dean Vavra: Eye Banking*
- 2. Smolin and thoft,s :The Cornea Scintific foundation and clinical practice ,fourth edition*
- 3. T.Bredehorn Mayr : Eye Banking ,Karger 2009*

Paper 2: Clinical Psychology

Unit I

Mental health criterion, Mental Health and Illness, concept of Positive mental health, Psychological well being, attitude towards mental illness, epidemiological studies and socio-demographic correlates of mental illness in India

Unit II

Social class, Social Change, Cultural shock, Migration, Religion and gender related issues with special reference to India.

Unit III

Psychological aspects of disability and rehabilitation in India context, the role of family and society in the education, training and rehabilitation of disabled, Behavioral Model, Evaluation of behavioral model, Psychodynamic model, Evaluation of psychodynamic model, Cognitive model, Evaluation

Unit IV

Case history and Interviewing, Psychopathology of personality and Behaviors disorder, Specific personality disorders, Habit and Impulse disorders, Mental and behavior disorder, psychosomatic disorder,

Unit V

*Psychopathology of childhood and adolescence disorders, Anxiety disorders, Schizophrenia, Psychopathology of emotional, behavioural and developmental disorders of childhood and adolescence
Mental retardation, Classification, Etiology and management /rehabilitation*

Text Book:

David R.Shaffer, Katherine KIPP: Developmental psychology childhood and Adolescence , International ed of 9th revised ed ,31 Jan 2013

Kevin Brewer: Clinical Psychology Heinemann, 2001

Niraj Ahuja: A Short Textbook of Psychiatry Jaypee Brothers Publishers, 2006

Margaret Harris and George Butterworth: Developmental Psychology: A Student's Handbook , 18 April 2002,

Elective- II
Paper 1: Epidemiology

UNIT 1

What is epidemiology?

Definition, scope, and uses of epidemiology

Epidemiology and public health, Causation of disease, Natural history of disease, Health status of populations, Evaluating interventions, Achievements in epidemiology, Smallpox, Methyl mercury poisoning, Rheumatic fever and rheumatic heart disease, Iodine deficiency diseases, Tobacco use, asbestos and lung cancer, Hip fractures, HIV/AIDS, SARS,

Measuring health and disease

Defining health and disease, Diagnostic criteria, Measuring disease frequency, Population at risk Incidence and prevalence, Case fatality, Interrelationships of the different measures

Using available information to measure health and disease, Mortality,

Death rates, Infant mortality, Child mortality rate, Maternal mortality rate, Adult mortality rate, Life expectancy, Age-standardized rates, Morbidity, Disability, Health determinants, indicators, and risk factors, Other summary measures of population health

UNIT 2

Types of Studies

Observational studies, Experimental studies, Observational epidemiology, Descriptive studies Ecological studies, Ecological fallacy, Cross-sectional studies, Case-control studies, Cohort studies

Experimental epidemiology, Randomized controlled trials, Field trials, Community trials,

Potential errors in epidemiological studies, Random error, Sample size, Systematic error,

Selection bias, Measurement bias, Confounding, The control of confounding, Validity, Ethical issues

UNIT 3

Causation in epidemiology

The concept of cause, Sufficient or necessary, Sufficient and necessary, A causal pathway, Single and multiple causes, Factors in causation, Interaction, A hierarchy of causes, Establishing the

cause of a disease, Considering causation, Temporal relationship, Plausibility, Consistency,

Strength, Dose–response relationship, Reversibility, Study design, Judging the evidence

UNIT 4

Clinical epidemiology

Definitions of normality and abnormality, Normal as common, Abnormality associated with disease

Abnormal as treatable, Diagnostic tests, Value of a test, Natural history and prognosis, Quality of life

Effectiveness of treatment, Use of evidence-based guidelines, Prevention in clinical practice,

Reducing risks, Reducing risks in patients with established diseases

UNIT 5

Environmental and occupational epidemiology

Environment and health, Impact of exposure to environmental factors, Evaluation of preventive measures

Exposure and dose, Biological monitoring, Interpreting biological data

Individual versus group measurements, Population dose, Dose–effect relationships, Dose–response relationships, Assessing risk, Health impact assessment, Risk management,

Environmental health impact assessment, Injury epidemiology, Traffic crash injuries, Workplace injury, Violence, Suicides

Special features of environmental and occupational epidemiology, Setting safety standards,

Measuring past exposure, Healthy worker effect in occupational studies, Continuing challenges for epidemiologists

Text Book:

Basic Epidemiology 2nd Edition: by R Bonita: Published by World Health Organization

Paper 2: First Aid

Unit I

Aims and Objectives of first Aid: Defenition, Objects, Principles, Responsibilities, Golden rules of first Aid, Kit of First Aider

Human Anatomy and physiology: Body Regions, Body Cavities, The central Nervous System, Abdonminal Quadrants, Body Systems, Circulatory System, respiratory System, Gastro Intestinal System, Urinary System, Nervous System, Hemopoitic System

First Aid during Emergency: Diagnosis, Blood Pressure, General Head to Toe Examination, Physical Examination

Resuscitation technique: Basic life Support, Breathing, Mouth to mouth Ventilation, Procedure of artificial Ventilation, Silvester Method

Recovery Position: Advantage Of recovery Position, How to Make Recovery Position.

Unit II

Haemorrhage or bleeding: Types of Haemorrhage, Special Forms of Bleeding.

Shock: Effects of Shock, Causes of Shock, Factors influencing the Degree of Shock.

Wounds: Definition, Emergency care for Open wounds, Wound with foreign body, Special Wounds.

Dressing and Bandages: Types of Dressing, General Rules For Applying Dressings, General Rules For Applying Bandages.

Sling

Fractures: Causes of Fractures, Types of Fractures, Classification of Fractures, Skull Fractures, Jaw and Facial Fractures, Upper Trunk and Limbs, Lower Trunk and Limbs.

Unit III**Emergencies:**

Medical Emergencies: respiratory Emergencies, Asphyxia, Drowning, Suffocation, Strangulation, Throttling, Hanging, smoke Inhalation, Suffocation by Poisonous Gases, Cardiovascular Emergencies, Heat Attacks, Angina Pectoris, Congestive Heart Failure, Emergencies of Nervous system, Unconscious Patient, Infantile convulsions, Epilepsy, Status Epilepticus, Hysteria, Diabetic Emergencies, Insulin Shock and Diabetic Coma, Liver emergency, Kidney Emergency.

Poisoning: Routes of Taking Poisons, General symptoms and Signs, Acid Poisoning, Alkali Poisoning, Drugs, common Plant Poisoning, Metal Poisoning, organic Chemical Poisoning Anaphylactic Shock (severe allergic reaction): insect Bites, Scorpion Bites, Sting of Mites, Ticks and Leeches, Snake Bite, Dog Bite.

Road accidents,

Effect of temperature: Sun Burn, Snow Blindness and Welder's Flash, Hypothermia, Frost Bite, Trench Foot, chilblain, Heat Exhaustion, Heat Stroke

Surgical Emergencies: Ligaments, First Aid in Muscle Injury, First Aid in Joint Injury

Injuries: Head Injuries, Chest Injuries, Abdominal Wound, Blast Injuries, Crush Injury, Burns and Scalds, electrical injuries, First Aid in Foreign Bodies.

Handling and transportation: General Principles, Aim to Transport, Lifting casualty, Lifting a casualty in a Wheel Chair, stretchers.

Unit IV

Common Ailments : Headache, Migraine, Earache, Toothache, Common cold and cough, Neck ache, Backache, Pain in Abdomen, Diarrhoea and Dysentery, Travel Sickness.

Unit V

Miscellaneous: Antiseptics, Sterilisation, Violent Patient, Suicidal Patient, Sexual Assault, Alcoholic Hallucination, Drug Abuse, Smoking, Miscarriage, Emergency Childbirth, Immunization Schedule, Cancer, Signs of Death.

Food and Nutrition: Proteins, Fats, Carbohydrates, Calories, Vitamins and Minerals, Phosphorus, Iron, Sodium Chloride, Zinc, Copper, Cobalt, Water, Fuel Value of Food, Balanced Diet

Ambulance service in disaster;

Sports injuries: Knee, Jumper's Knee, Osgood-Schlatter's Syndrome, Bursitis, Shin Pain, Tennis Leg, Achilles Tendinitis, Retrocalaneal Pain, Plantar Fasciitis, Blisters, Athlete's Foot, Frozen Shoulder, Tennis Elbow, Wrist Pain in Gymnasts, Finger endon Injury, Eye injuries, Dental Injuries, Ear Injuries, Under water Diving Injury, Maxillofacial Injuries, Nasal Injuries, Ultrasonic, Faradic Stimulation, Manual Therapy, Treatment Modalities of Sports Injuries.

Text Book:

1. L.C. Gupta, Abhitabh Gupta: *Manual of First Aid*, Jaypee
2. Savitri Ramaiah: *First Aid: Health Solutions Sterling Publishers Pvt Ltd (September 19, 2012)*

Elective III
Paper 1: Sports Vision

Unit I

Introduction to Sports Vision

Sports and Vision, Visual Task Analysis in Sports, Visual Information Processing In Sports, Visual Performance Evaluation

Unit II

Sports Vision Screening and Report Strategies

Ocular Injuries in Sports: Assessment and Management, Enhancement of Visual skills in Sports, Visual Needs in Tennis, Visual Needs in Table Tennis

Visual Needs in Badminton

Unit III

Visual Needs in Cricket, Visual Needs in Baseball, Visual Needs in Golf, Visual Needs in Hockey, Visual Needs in Basketball

Unit IV

Visual Needs in Volleyball, Visual Needs in Football, Visual Needs in Judo, Visual Needs in Wrestling, Visual Needs in Boxing, Visual Needs in Yachting

Visual Needs in Scuba-diving

Unit V

Visual Needs in Swimming, Visual Needs in Rifle Shooting, Visual Needs in Clay Pigeon Shooting, Visual Needs in Archery, Visual Needs in Chess, Visual Needs in Snooker, Visual Needs in Motor car Racing, Visual Needs in Downhill Skilling

Text Books:

Rachel V. North: Work and the eye, Second edition Butterworth-Heinemann, 2001

Graham B. Erickson: Sports vision: vision care for the enhancement of sports performance , Elsevier Health Sciences, 2007

Ajay Kumar Bhootra, Sumitra: Elite Sports and Vision Jaypee Brothers Publishers, 01-Oct-2008

Paper 2: Law and Optometry

Unit I

Law and Equity

General law and optometry

Professional Ethics

Unit II

Negligence (civil and Criminal)

The negligent professional

Theory of Licensure

Unit III

Clinical decision making

Law related to Eye donation

Laws governing practice of medical and paramedical profession in India

Unit IV

Malpractice-theory of liability-damages-minimizing malpractice claims

Discipline, professional and unprofessional conduct

Rules related to Optician

Consumer act with respect to optometry and dispensing of optical Aids

International Optometry

Unit V

Industrial eye protection and consumer protection

Professional ethics and professional discipline

The need for insurance

Text Books:

SEYMOUR L. COBLENS: Optometry and the Law, American Optometric Association, St. Louis, 1976.

Stephen Taylor: Law in Optometric Practice, 1st Edition

Elective IV

Paper1: Refractive Surgeries

Unit I

Corneal Layers and Shape to the optics of eye

Computerized Corneal Topography:

Axial Power and Curvature, Instantaneous Power and Curvature, Mean Curvature, Indications For Corneal Topography In Refractive Surgery, Corneal Topography and irregular Astigmatism, Limitations of Corneal Topography, Clinical Situation illustrating the role of corneal topography in refractive Surgery,

Wave Front Analysis:

Wave Front Analysis and Irregular Astigmatism, Fermat's Principle and Wave Front Analysis, Measurement of Wavefront Aberrations and Graphical Representations, Lower -Order aberrations, higher order Aberrations.

Biomechanics of the Cornea

Effects of KeratoRefractive surgery

Corneal Wound Healing

Laser Biophysics, Laser-Tissue interactions, Types of photo ablating Lasers, Wavefront-Guided Laser Ablation.

Unit II

Patient Evaluation: Preoperative Evaluation, Patient Expectations, Social History, Medical History, Pertinent Ocular History, Patient Age, Presbyopia, Monovision

*Examination, Uncorrected Visual Acuity and Manifest and Cycloplegic, Refraction Acuity, Pupillary Examination, Ocular Motility, Confrontation Fields and Ocular Anatomy, Intra Ocular Pressure, Slit Lamp Examination, Dilated Fundus Examination
Ancillary Test, Corneal Topography, Pachymetry, Wavefront Analysis,*

Unit III

Specific Procedures In refractive Surgery:

Radial Keratotomy, Patient Selection, Complications, Hexagonal Keratotomy, Incisional Correction of Astigmatism, Transverse Keratotomy, Arcuate keratotomy and Limbal Relaxing incisions, Complication

Keratophakia, Homoplastic corneal inlays, Alloplastic Corneal Inlays

Epikeratoplasty, Patient Selection, Complication, Alloplastic Corneal Onlays

Intrastromal Corneal ring segment, Patient Selection, Complication, Other Potential uses For Intrastromal Corneal Ring Segments

Orthokeratology

Unit IV

Photorefractive keratectomy (PRK) and laser Sub epithelial Keratomileusis (LASEK), Complication, Patient selection.

Laser in Situ Keratomileusis (Lasik), Complication, Patient Selection

Wavefront-Guided PRK and LASIK, Pre operative preparation

Thermokeratoplasty, History, Laser Thermokeratoplasty, Conductive Keratoplasty, Patient Selection

Phakic IOL, Advantages, Disadvantages, Patient Selection, Complication

Bioptics

Clear lens Extraction (Refractive Lens Exchange): Patient Selection, Surgical Planning, IOL calculation in Refractive Lensectomy, Complications, Advantages, Disadvantages

Toric IOL, Instrumentation, Patient Selection, Planning and Surgical technique, Complications

Multifocal IOL, Patient Selection, Side Effects and Complications

Accommodative IOL, Light-Adjustable IOL

Accommodative and Non-Accommodative treatment of Presbyopia:

Theories of Accommodation

Non Accommodative Treatment of Presbyopia: Monovision, Conductive Keratoplasty, IOL Implants, Custom or Multifocal Ablation, Corneal Inlays

Accommodative Treatment of Presbyopia, Scleral Surgery, Other IOL Innovations on the Horizon

Unit V

Refractive Surgery in Ocular and Systemic Disease: Introduction

Ocular Conditions: Dry eye, Herpesvirus, Keratoconus, Post-Penetrating Keratoplasty, Ocular Hypertension and Glaucoma, Retinal disease, Amblyopia and Strabismus in the Adult and Child Systemic Condition, Human Immunodeficiency Virus, Diabetes Mellitus, Connective Tissue Disease

IOL calculation after Refractive Surgery, With Pre-Refractive Surgery Refraction and Keratometry and Post-Refractive Surgery Refraction, With pre-Refractive Surgery Refraction and Keratometry, With Pre-refractive surgery Refraction and Post-Refractive Surgery refraction, With Pre-refractive surgery Refraction only , With no pre-operative Information

Retinal Detachment repair after LASIK, Corneal Transplantation after Refractive Surgery

Contact Lens Use after Refractive Surgery: Indications, General Principles, and Contact Lenses after RK, Contact lens fitting after PRk, Contact Lens Fitting after LASIK, contact Lens assisted, pharmacologically induced Keratosteepening (CLAPIKS)

Glaucoma after refractive Surgery

Text Book:

1. *Refractive Surgery: AAO – Section 13*
2. *Wavefront analysis aberrometers and corneal topography Benjamin F. Boyd, Amar Agarwal, Jorge Alio and Ronald Krueger (Mar 25, 2003)*
3. *Ming Wang: Corneal Topography in the Wavefront Era and Guide for Clinical Application, Second edition*

Paper 2: COMMUNITY OPTOMETRY

Unit: I

*Public Health Optometry: Concepts and implementation
Dimensions, determinants and indicators of health
Levels of disease prevention and levels of health care patterns*

Unit: II

*Epidemiology of blindness – Defining blindness and visual impairment
Eye in primary health care
Contrasting between Clinical and community health programs*

Unit: III

*Community Eye Care Programs
Community based rehabilitation programs
Nutritional Blindness with reference to Vitamin A deficiency
Vision 2020: The Right to Sight*

Unit: IV

*Screening for eye diseases
National and International health agencies, NPCB
Role of an optometrist in Public Health
Organization and Management of Eye Care Programs – Service Delivery models
Health manpower and planning & Health Economics*

Unit: V

*Evaluation and assessment of health programmes
Optometrists role in school eye health programmes
Basics of Tele Optometry and its application in Public Health
Information, Education and Communication for Eye Care programs*

Text books:

- *GVS Murthy, S K Gupta, D Bachani: The principles and practice of community Ophthalmology, National programme for control of blindness, New Delhi, 2002*
- *Newcomb RD, Jolley JL : Public Health and Community Optometry, Charles C Thomas Publisher, Illinois, 1980*
- *K Park: Park's Text Book of Preventive and Social Medicine, 19th edition, Banarsidas Bhanot publishers, Jabalpur, 2007*
- *MC Gupta, Mahajan BK, Murthy GVS, 3rd edition. Text Book of Community Medicine, Jaypee Brothers, New Delhi, 2002*