

**Maharaja Ranjit Singh Punjab Technical University
Bathinda-151001**



FACULTY OF PHARMACY

SYLLABUS

FOR

M.SC. (OPTOMETRY)

(2 YEARS PROGRAMME)

2023 BATCH ONWARDS

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**MRSPTU M.SC. (OPTOMETRY)
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SCHEME

| 1 st Semester | | Contact Hrs. | | | Marks | | | Credits |
|--------------------------|---|--------------|----------|----------|------------|------------|------------|-----------|
| Subject Code | Subject | L | T | P | Int. | Ext | Total | |
| MOPTS1-101 | Basic Sciences and Clinical Optometry | 3 | 1 | 0 | 40 | 60 | 100 | 4 |
| MOPTS1-102 | Visual and Applied Optics | 3 | 1 | 0 | 40 | 60 | 100 | 4 |
| MOPTS1-103 | Epidemiology and Community Eye Care | 3 | 1 | 0 | 40 | 60 | 100 | 4 |
| MOPTS1-104 | Research Methodology and Biostatistics | 3 | 1 | 0 | 40 | 60 | 100 | 4 |
| MOPTS1-105 | Ocular Disease and Diagnostics-I | 3 | 1 | 0 | 40 | 60 | 100 | 4 |
| MOPTS1-106 | Visual and Applied Optics-Practical | 0 | 0 | 4 | 60 | 40 | 100 | 2 |
| MOPTS1-107 | Ocular Diseases and Diagnostics-Practical | 0 | 0 | 4 | 60 | 40 | 100 | 2 |
| Total | | 15 | 5 | 8 | 320 | 380 | 700 | 24 |

| 2 nd Semester | | Contact Hrs. | | | Marks | | | Credits |
|--------------------------|---|--------------|----------|-----------|------------|------------|------------|-----------|
| Subject Code | Subject | L | T | P | Int. | Ext | Total | |
| MOPTS1-201 | Ocular Diseases and Diagnostics-II | 3 | 1 | 0 | 40 | 60 | 100 | 4 |
| MOPTS1-202 | Advanced Contact Lens Studies –I | 3 | 1 | 0 | 40 | 60 | 100 | 4 |
| MOPTS1-203 | Pediatric Optometry and Binocular Vision | 3 | 1 | 0 | 40 | 60 | 100 | 4 |
| MOPTS1-204 | Low Vision and Geriatric Optometry | 3 | 1 | 0 | 40 | 60 | 100 | 4 |
| MOPTS1-205 | Ocular Disease and Diagnostics-II - Practical | 0 | 0 | 4 | 60 | 40 | 100 | 2 |
| MOPTS1-206 | Advanced Contact lens-I -Practical | 0 | 0 | 4 | 60 | 40 | 100 | 2 |
| MOPTS1-207 | Pediatric and Geriatric Optometry-Practical | 0 | 0 | 4 | 60 | 40 | 100 | 2 |
| Total | | 12 | 4 | 12 | 340 | 360 | 700 | 22 |

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| 3 rd Semester | | Contact Hrs. | | | Marks | | | Credits |
|--------------------------|--|--------------|----------|----------|------------|------------|------------|-----------|
| Subject Code | Subject | L | T | P | Int. | Ext | Total | |
| MOPTS1-301 | Low Vision Care and Rehabilitation | 3 | 1 | 0 | 40 | 60 | 100 | 4 |
| MOPTS1-302 | Recent Advancements in Optometry | 3 | 1 | 0 | 40 | 60 | 100 | 4 |
| MOPTS1-303 | Advanced Contact Lens -II | 3 | 1 | 0 | 40 | 60 | 100 | 4 |
| MOPTS1-304 | Vision Therapy | 3 | 1 | 0 | 40 | 60 | 100 | 4 |
| MOPTS1-305 | Occupational Optometry | 3 | 1 | 0 | 40 | 60 | 100 | 4 |
| MOPTS1-306 | Advanced Contact Lens II - Practical | 0 | 0 | 4 | 60 | 40 | 100 | 2 |
| MOPTS1-307 | Low Vision Care and Rehabilitation- Practical | 0 | 0 | 4 | 60 | 40 | 100 | 2 |
| Total | | 15 | 5 | 8 | 320 | 380 | 700 | 24 |

| 4 th Semester | | Contact Hrs. | | | Marks | | | Credits |
|--------------------------|-----------------------------|--------------|---|----|-------|-----|------------|-----------|
| Subject Code | Subject | L | T | P | Int. | Ext | Total | |
| MOPTS1-401 | Internship and Dissertation | 0 | 0 | 40 | 80 | 120 | 200 | 20 |
| Total | | | | | | | 200 | 20 |

The candidate shall undergo internship in relevant department. The internship report shall be submitted to the parent institute & Viva-Voce examination shall be conducted by external expert.
or

The candidates will be supervised by the concerned faculty & the project report will be submitted to the institute. The Viva-Voce examination shall be conducted by external expert.

Overall Marks / Credits

| Semester | Marks | Credits |
|-----------------|-------------|-----------|
| 1 st | 700 | 24 |
| 2 nd | 700 | 22 |
| 3 rd | 700 | 24 |
| 4 th | 200 | 20 |
| Total | 2300 | 90 |

FIRST SEMESTER

**MRSPTU M.SC. (OPTOMETRY)
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BASIC SCIENCES AND CLINICAL OPTOMETRY

Subject Code: MOPTS1-101

**L T P C
3 1 0 4**

Duration: 60 (Hrs)

Course Outcomes:

Students will be able to Achieve Anatomical knowledge about

- The general structure and morphology of eye - physiology and anatomy of eye
- Ocular pathology
- Refractive errors
- The student will learn to solve problems related to various ocular pathological conditions and infections.

Unit: 1 (14 hrs)

Development of eye ball, blood supply of orbit, nerve supply of eye ball, Optic nerve, Oculomotor and Trochlear nerve, Trigeminal and Abducent nerve, Facial nerve, Ocular Adnexa, Lacrimal apparatus

Eye ball (Sclera, uveal tract, retina), Angle of anterior chamber, Crystalline lens. Movement of eyeball and extra ocular muscles, Autonomic Nervous System, Visual Pathway.

Unit: 2 (16 hrs)

Intra-ocular Pressure- Intra-ocular pressure: a dynamic equilibrium Tonography, Visual Adaptation:- Mechanisms of visual adaptation, Dark adaptation and regeneration of rhodopsin, Adaptation of photoreceptors, Visual Acuity:- Specifications of the stimulus (physical basis), Retinal anatomy, Physiologic factors, Acuity criteria, Measurement of ordinary visual acuity (minimum angle of resolution), Factors influencing visual acuity, Sinusoidal grating targets

Color Vision:- Color and the visible spectrum, Color mixing, metameric matches and complementary wavelengths, Neural encoding of color, Congenital & Acquired dyschromatopsia, The Central Visual Pathways:- The retino – geniculo- cortical pathway, visual field examination, structure and functions of lateral geniculate body, the primary visual cortex, extrastriate visual cortex, visual deprivation

Binocular Vision:- Normal adult psychophysics, Normal development of binocular vision, Mal development of binocular vision, Strabismus and amblyopia, Binocular vision in other animals

Unit: 3 (16 hrs)

Ocular pathology, microbiology and pharmacology

Infections, Inflammation and repair mechanisms, Allergic reactions in ocular tissues, Bacteria, Virus, Fungus and their features for differentiation, Common bacterial infections of the eye, Common fungal infections of the eye, Common viral infections of eye

Classification of Ophthalmic drugs, Sympathomimetics & Sympatholytics. Parasympathomimetics & Parasympatholytics, Diagnostic drugs used in optometry – Dyes and stains, Antibacterial, Antifungal agents, Steroid and Non-steroidal anti-inflammatory drugs.

Unit: 4 (14 Hrs.)

Clinical optometry

Diseases of lids, diseases of adnexa, diseases of orbit, diseases of lachrymal apparatus, diseases of conjunctiva, Refractive errors

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Reference 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. Myron Yanoff and Jays Duker : Ophthalmology

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VISUAL AND APPLIED OPTICS

Subject Code: MOPTS1-102

L T P C

Duration: 60 (Hrs.)

3 1 0 4

Course Outcomes: On completion of course, students will

- Understand the concept emmetropia & ametropia
- Applying the various concepts of ophthalmic lens dispensing
- Applying the concept of spectacle frame selection
- Understanding basic and advanced techniques of pediatric dispensing
- Applying the concept of dispensing spectacle in special children

Unit: 1 (15 Hrs.)

Schematic and reduced eyes and their properties;

Optical constants of the eye and their measurement. Purkinje images. Corneal curvature and thickness. Keratometry and pachymetry. Indices of aqueous and vitreous;

Optical Defects of the Eye- Shape of Cornea, Shape & RI of the lens, Optical axis, Visual axis (angle alpha, Fixation axis (angle gamma), Aberration of the Optical system of eye, Depth of focus, Diffraction & resolving power.

Unit: 2 (15 Hrs)

Emmetropia, Emmetropization and ametropia, Axial versus spherical ametropia, Theories of Myopia, Myopia control Program

Accommodation- possible mechanism of accommodation-Schiener disc experiment- theories of accommodation- modern theory- changes in the lens during accommodation- the amplitude of accommodation- the measurement of the amplitude n of accommodation- depth of field, luminance and blur tolerance- amplitude of accommodation versus age, Accommodative and vergence disorder.

Presbyopia-near vision addition- estimate of addition-unequal near vision addition- effect of changing the spectacle distance – hypermetropia and accommodation.

Unit: 3 (15 Hrs)

Spectacle frame: Current frame materials- a) Plastics b) Metals

Frame types: Combination of frames-Half-eye frames, Mounts, Nylon-cord frame, Special purpose frames.

Frame measurements: The boxing system, The datum system, Comparison of the two systems, Lens position, Segment specification

Frame Selection: Fashion, Function, Feel, Conflicting needs, Price, Standard alignment, Frame availability in Indian market

Lens Selection: Ground rule for selection, Selection criteria, Facial Measurement, The PD, Visual axes, Measuring inter papillary distance using PD ruler, Common difficulties in measuring PDs, measuring monocular PD, Measuring near PD, Lenticular, Atoric, HI Index, Aspherical, Absorptive lenses, Coating

Measuring heights: Single vision, Multi focal, bi-focal, Progressive

Unit: 4 (15 Hrs)

Pediatric Dispensing: The changing image of spectacle, Age differences. Frame Selection-

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Technical Criteria, Fashion criteria, some tips on selection Lens Selection Technical Criteria- Communicating with kids, kids' corner, Facial measurement of the kids-PDs, Centers, Bi-focals, Dealing with problems: Dealing with clients, Common client problems, dealing with professional colleagues, Dealing with the laboratories, Soft skills and professional communication with Patient and Customers.

Special needs dispensing: Occupational dispensing, Hazards in the work place, Occupational health safety legislation, Visual Ergonomics, Visual hygiene

Sports and Industrial eye protection: Standards covering eye protection, Lens materials & impact resistance, Frame & eye protection.

Reference books:

1. System for Ophthalmic Dispensing -Irvin Borish
2. M P Keating: Geometric, Physical and Visual optics, 2nd edition, Butterworth-Heinemann, USA, 2002
3. HL Rubin: Optics for clinicians, 2nd edition, Triad publishing company. Florida, 1974.
4. H Obstfeld: Optic in Vision- Foundations of visual optics & associated computations, 2nd edition, Butterworth, UK, 1982.
5. WJ Benjamin: Borish's clinical refraction, 2nd edition, Butterworth Heinemann, Missouri, USA, 2006

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EPIDEMIOLOGY AND COMMUNITY EYE CARE

Subject Code: MOPTS1-103

L T P C

Duration: 60 (Hrs.)

3 1 0 4

Course Outcomes: The student will be able to

- Understand the concept of Epidemiology
- Apply concept of optometric Evaluation procedure
- Understand the concept of health planning management, policies and education
- Utilize the concept of Community health care services and implementation of vision 2020.
- Analyze the data as well as basic concept of evaluation of patient for clinical and research purposes

Unit: 1 (15 hrs)

Prevalence, incidence and distribution of visual impairment

Methodology: Basics of Epidemiology study methods, Types of study designs; Screening for visual disorders; Childhood blindness

Refractive errors and presbyopia

Unit: 2 (15 hrs)

Age-related cataract; Low Vision; Diabetic retinopathy Glaucoma

Age-related Macular Degeneration; Vitamin A deficiency; Corneal and external diseases; Prevention strategies

Unit: 3 (15 hrs)

Concept of Health and Disease; Principles of Epidemiology and Epidemiological Methods; Screening for Eye Disease, Refractive errors, Low Vision, Cataract, Diabetic retinopathy, Glaucoma, Amblyopia, Squint.

Unit: 4 (15 hrs)

Health Information and Basic Medical Statistics; Communication for Health Education; Health Planning and Management; Health care of community; How to plan and implement Vision 2020

Reference books:

1. MC Gupta, Mahajan BK, Murthy GVS, 3rd edition. Text Book of Community Medicine, Jaypee Brothers, New Delhi, 2002.
2. Epidemiology of eye disease: Johnson and Gordon

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RESEARCH METHODOLOGY AND BIostatISTICS

Subject Code: MOPTS1-104

L T P C

Duration: 60 (Hrs.)

3 1 0 4

Course Outcomes: On completion of the course, the students will

- Understand the basics of research types and methods of research
- Ability to write research proposal
- Apply the concept for writing the research articles
- Ability to apply the concepts for writing research articles
- Ability to apply research in evaluating the research materials

Unit: 1 (15 hrs)

Research Methodology – Definition of research, Characteristics of research, Steps involved in research process, Types of Research methods and methodology, Terminology used in quality control such as sensitivity, specificity, accuracy, precision, positive and negative predictive value.

Unit: 2 (15hrs)

Statistics, data, population, samples, parameters; Representation of Data: Tabular, Graphical, Measures of central tendency, Arithmetic mean, mode, median; Measures of dispersion, Range, mean deviation, variation, standard deviation, Standard error, Chi-square test

Unit: 3 (15 hrs)

Introduction and significance of Student's t-distribution: test for single mean, difference of means and paired t- test, F-distribution, one-way and two-way analysis of variance (ANOVA). Small sample test based on t-test, Z- test and F test; Confidence Interval; Distribution-free test

Unit: 4 (15 hrs)

Total Quality Management System

General Requirements for Standardization & Calibration of Clinical Laboratories: Introduction, Scope & Need of standardization, Quality Management requirement: testing & Calibration Procedures, Total Quality Assurance, Quality Control Charts & Systems. Quality Audit: Internal & External Audit, Accreditation & Certification NABL, ISO, CAP

Reference books:

1. Methods in Biostatistics by B.K Mahajan
2. Probability and Statistics by Murray
3. Epidemiology of Eye Diseases, by Gordon and Drawin
4. Research Methodology by SMIsrani

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OCULAR DISEASES AND DIAGNOSTICS-I

Subject Code: MOPTS1-105

**L T P C
3 1 0 4**

Duration: 60 (Hrs.)

Course Outcomes: On completion of course, students will

- Understand the concept of different Ocular diseases of anterior segment of Eye
- Apply the concept of anatomy & Physiology of Eye while understanding the Pathology of different ocular diseases
- Utilize the concept of clinical features of the diseases for the differential diagnosis of the anterior segment diseases
- Analyze the concept of clinical features of disease for management of anterior segment diseases
- Applying the concept of different Ocular diseases of anterior segment of Eye

UNIT: 1 (15 Hrs)

Refresher of anterior segment ocular diseases; Congenital anomalies, Inflammatory disorders; Degenerative conditions; Dystrophies, Structural Deformities; Oedema, Cysts and Tumors

UNIT: 2 (15 Hrs)

Refresher of glaucoma diagnosis and management

UNIT: 3 (15 Hrs)

Pre- and Post-operative management of anterior segment diseases.
Anterior segment diagnostics, Tonometry, HVF and Pentacam

UNIT-4 (15 Hrs)

Pachymetry, OCT, Gonioscopy, Cataract evaluation, Slit Lamp

Reference books:

1. Clinical Ophthalmology: Jack J Kanski
2. Diagnostics and imaging techniques in Ophthalmology: Amar Agarwal

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VISUAL AND APPLIED OPTICS -PRACTICAL

Subject Code: MOPTS1-106

L T P C

Duration: 60 (Hrs)

0 0 4 2

Course Outcome:

- Students will learn to equip with a thorough knowledge of mirrors and lenses.
- Students will be exposed to various diagnostic techniques/instruments for assessment of vision

Experiments Related to:

1. Prism bar cover test (PBCT)
2. Cover and uncover test
3. Worth four dot test (WFDT)
4. Stenopic slit
5. Duchrome test
6. Negative reference point assessment (NRA)
7. Positive reference point assessment (PRA)
8. Near point of convergence (NPC) and near point of accommodation (NPA)
9. Ophthalmoscopy
10. Retinoscopy
11. Confrontation VFT
12. Schiottz tonometer
13. Krimsky test

Reference Books

1. IACLE modules 1 -10
2. Contact Lens Practice- Nathan Efron. Elsevier Sciences. Third Edition
3. Contact Lenses- Philips Stone
4. Fitting guide for Rigid & soft contact lens: A practical Approach: Slatt & Stein

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OCULAR DISEASES AND DIAGNOSTICS-PRACTICAL

Subject Code: MOPTS1-107

L T P C

Duration: 30 (Hrs)

0 0 2 1

Course Outcomes: Students will learn

- To diagnose ocular diseases using various instruments and based on signs and symptoms about the diseases
- To manage the various ocular conditions

Experiments:

- Electroretinography (ERG)
- Electrooculogram (EOG)
- Visual evoked potential/ response (VEP/VER)
- Optical coherence tomography (OCT)
- Fundus photography

Reference books:

1. IACLE modules 1 -10
2. Contact Lens Practice- Nathan Efron. Elsevier Sciences. Third Edition
3. Contact Lenses- Philips Stone

Fitting guide for Rigid & soft contact lens: A practical Approach: Slatt & Stein

SECOND SEMESTER

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OCULAR DISEASES AND DIAGNOSTICS-II

Subject Code: MOPTS1-201

**L T P C
3 1 0 4**

Duration: 60 (Hrs)

Course Objectives: On completion of the course, the students will

- Understand the concept of different Ocular diseases of posterior segment of Eye
- Apply the concept of anatomy & Physiology of Eye while understanding the Pathology of different ocular diseases
- Utilize the concept of clinical features of the diseases for the differential diagnosis of the ocular diseases
- Analyze the concept of clinical features of the diseases for the management of ocular diseases
- Apply the concept of different Ocular diseases of posterior segment of Eye

Course Outcomes: Students will learn disease and diagnosis procedure in ophthalmology and management as well as complication of the diseases in the eyes.

Unit: 1 (15 Hrs)

Refresher of posterior segment ocular diseases including; Congenital anomalies; Inflammatory disorders

Degenerative conditions & Dystrophies; Structural Deformities; Oedema, Cysts and Tumors

Unit: 2 (15 Hrs)

Diagnosis and therapeutics for Posterior Segment disease

Unit: 3 (15 Hrs)

Surgical treatment of posterior segment diseases.

Unit: 4 (15 Hrs)

Posterior segment Diagnostics: ERG, EOG, VEP, OCT, Fundus photography

Neuro optometric diseases and disorders

Reference books-

1. Clinical ophthalmology: Jack J Kanski
2. Diagnostics and imaging techniques in Ophthalmology: Amar Agarwal

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ADVANCED CONTACT LENS STUDIES-I

Subject Code: MOPTS1-202

**L T P C
3 1 0 4**

Duration: 60 (Hrs)

Course Objectives: On completion of the course, the students will

- Understand about contact lens history, introduction, design and relation with struct
- Understand about RGP contact lens material and their property, their parameter
- Understand about RGP contact lens manufacturing techniques & fitting of RGP lenses
- Understanding and know about care maintenance and do's & don't of RGP contact lens
- Analyze the complication and their management of RGP contact lenses

Course Outcomes: Students will learn advance stage of disease in eye which can be corrected with the help of special types of contact lens.

Unit: 1 (15 Hrs)

- Anatomy and Physiology of the Cornea and related Structures; Contact Lens Material
- Microbiology, lens care and maintenance, tears and contact lenses, optics and lens designs

Unit: 2 (15 Hrs)

Clinical instrumentation in contact lens practice, Rigid gas permeable contact lens fitting

Unit: 3 (15 Hrs)

Soft contact lens fitting; Toric Contact lens fitting; Lens care regimen; Contact lens standards

Unit: 4 (15 Hrs)

- Lens checking: Soft and Rigid
- Contact lens complications
- **Special types of Contact lenses** – diagnosis, surgery, protective, therapeutic, sports, partially sighted

Reference books:

1. Contact lenses – Stone and Philips
2. IACLE modules

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PEDIATRIC OPTOMETRY AND BINOCULAR VISION

Subject Code: MOPTS1-203

L T P C
3 1 0 4

Duration: 60 (Hrs)

Course Objectives: On completion of the course, the students will

- Understand the classification of strabismus
- Understand the concept of recording history in strabismus patients
- Understand the clinical features of convergent & divergent Strabismus, vertical & paralytic Strabismus
- Apply the concept of pediatric refraction
- Apply the concepts of diagnosis of pediatric anomalies

Course Outcomes: Students will achieve many pediatrics examinations and ability to co-operate the children's for eye examination binocular test also they learn.

Unit: 1 (10 Hrs)

- Refractive Development: Early Refractive Development
- Visually Guided control of Refractive State: Animal Studies
- Infant Accommodation and Convergence, Oculomotor Function: Conjugate Eye Movements of Infants
- Development of the Vestibuloocular and Optokinetic reflexes

Unit: 2 (10 Hrs)

- Spatial and Chromatic Vision, Front-end Limitations to Infant Spatial vision, Examination of two analyses
- Development of the Human Visual Field, Development of Scotopic Retinal Sensitivity
- Infant Colorvision, Orientation and Motion selective Mechanisms in Infants, Intrinsic Noise and Infant performance

Unit: 3 (15 Hrs)

- Binocular Vision: Development of interocular vision in Infants
- Stereopsis in Infants and its developmental relation to visual acuity
- Sensorimotor Adaptation and Development of the Horopter
- Two stages in the development of Binocular Vision and Eye Alignment
- Retinal and cortical Development
- Abnormal Visual Development
- Recent advancements in Infant Research

Unit: 4 (25 Hrs)

- Clinical Applications: Assessment of Child Vision and Refractive Error
- Refractive Routines in the Examination of Children, Cycloplegic Refraction
- Color Vision Assessment in Children, Dispensing for the Child patient
- Pediatric Contact Lens Practice, Dyslexia and Optometry Management

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- Electrodiagnostic Needs of Multiple Handicapped Children, Management Guidelines – Ametropia, Contant Strabismus
- Management Guidelines –Amblyopia, Accommodation and Vergence anomalies
- Nystagmus, Common genetic problems in Paediatric optometry
- Pediatric Ocular Diseases and Ocular Trauma in Children
- Myopia control, Clinical uses of prism

Reference books:

1. Clinical management of binocular vision Mitchell Scheiman and Bruce Wick
2. Applied concepts in vision therapy: Leonard Press
3. Pediatric optometry: Jerome K Rosner

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LOW VISION AND GERIATRIC OPTOMETRY

Subject Code: MOPTS1-204

L T P C
3 1 0 4

Duration: 60 (Hrs)

Course Objectives: On completion of the course, the students

- Understand the basic definition and classification of Low Vision
- Analyze the various causes of Low Vision
- Understand how to do examination of a low vision Patient
- Apply various optical and non-optical devices for visual rehabilitation of a low vision Patient
- Understand the legal aspects of Low Vision in India, as well as applying case studies to for visual rehabilitation of a low vision Patient

Course Outcomes: Students will learn about the Low Vision Aids and Geriatric examination of eyes

Unit: 1 (15 Hrs)

- Elements Visual Disorders – Medical Perspective
- The Epidemiology of Vision Impairment and Vision Impairment in the pediatric population
- Ocular Diseases: Age – Related Cataract, Glaucoma, ARMD, Diabetic retinopathy, Corneal Disorders, Ocular Trauma
- Sensory Neuro-ophthalmology and Vision Impairment
- Refractive Disorders and Visual Disorders – The Functional Perspective
- Low Vision and Psychophysics, Visual Functioning in Pediatric Populations with Low Vision
- Perceptual correlates of Optical Disorders, Functional aspects of Neural Visual Disorders of the eye and Brain
- Visual Disorders and Performance of specific Tasks requiring vision

Unit: 2 (15 Hrs)

- Visual Disorders – The Psychosocial Perspective
- Developmental perspectives – Youth Vision, Impairment and Cognition
- Spatial orientation and Mobility of people with vision impairments
- Social skills Issues in vision impairment, Communication and language: Issues and concerns
- Developmental perspectives on Aging and vision loss, Vision and cognitive Functioning in old age
- Interactions of Vision Impairment with other Disabilities and sensory Impairments.
- Children with Multiple Impairments

Unit: 3 (15 Hrs)

- The Environment and Vision Impairment: Towards Universal Design
- Indian Disabilities act, Children’s Environments, Environments of Older people
- Outdoor environments, Lighting to enhance visual capabilities

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- Signage and way finding, Accessible Environments through Technology
- Vision Rehabilitation: In Western Countries, In Asia
- Personnel preparation in Vision Rehabilitation
- Psychological and social factors in visual Adaptation and Rehabilitation
- The Role of psychosocial Factors in adaptation to vision Impairment and Habilitation outcomes for Children and Youth

Unit: 4 (15 Hrs)

- The Role of psychosocial Factors in adaptation to vision Impairment and Habilitation outcomes for Adults and Older adults
- Social support and adjustment to vision Impairment across the lifespan
- The person – Environment perspective of vision impairment
- Associated Depression, Disability and rehabilitation
- Methodological strategies and issues in social research on vision Impairment and rehabilitation

Reference books:

1. Richard L. Brilliant: Essentials of Low Vision Practice, Butterworth-Heinemann, 1999
2. Helen Farral: optometric Management of Visual Handicap, Blackwell Scientific publications, 1991
3. A J Jackson, J S Wolffsohn: Low Vision Manual, Butterworth Heinnemann, 2007

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OCULAR DISEASE AND DIAGNOSTICS-II (PRACTICAL)

Subject Code: MOPTS1-205

**L T P C
0 0 4 2**

Duration: 60 (Hrs)

Course Outcomes: Students will learn about the Advanced of examination, handling, interpretation of the reports and finding of the diseases in the case report

Experiments

- Refraction instruments (designs & features of standard test charts, trial frame & Phoropter units manual & automated)
- Slit lamp Biomicroscope (designs & features, application).
- Tonometers (designs & features, application)
- Anterior segment diagnostics- Corneal topography (videokeratography, Specular microscopy, Corneal Histerisis, Aberometry & Pentacam, ORB scan)
- Glaucoma diagnostics – Gonioscopy, computerized Visual field analysis(Perimetry)
- Electro diagnostics
- Electroretinography (ERG), Electrooculogram (EOG), Visual evoked potential/ response (VEP/VER), Optical coherence tomography (OCT), Fundus photography
- Lensometer (designs & features)
- Binocular indirect Ophthalmoscopy
- cataract evaluation
- Colour vision devices
- Ultrasonography
- SPECIAL INSTRUMENTS & TESTS: Brightness acuity test, Vision analyzer, Pupilometer, Video acuity test, Potential Acuity Meter, Abberometer

Reference books:

1. Optometric Instrumentation: David Hensen
2. Diagnostics and imaging techniques in Ophthalmology: Amar Agarwal
3. James Wolffsohn : Eye Essentials Ophthalmic Imaging
4. Mark Brezinski,: Optical Coherence Tomography: Principles and Applications
5. Benjamin F.Boyd : Wavefront analysis aberrometers and corneal topography
6. Arun D.singh: Ophthalmologic Ultrasound, An Issue of Ultrasound Clinics, vol 3

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ADVANCED CONTACT LENS-I (PRACTICAL)

Subject Code: MOPTS1-206

L T P C
0 0 4 2

Duration: 60 (Hrs)

Course Outcomes: Students will learn about

- The contact lens, indication, contraindications and complication of contact lens
- The Removal and Insertion procedure
- The fitting of contact lens
- The selfcare of contact lenses
- The need of examination in pre and post fitting of contact lens.

Experiments

Anatomy and Physiology of the Cornea and related Structures

Latest trends in contact lens materials & manufacturing methods

Optics of contact lens & design

Microbiology, Lens Care and Maintenance

Tears and contact lenses

Clinical Instrumentation in contact lens practice

Rigid Gas Permeable corneal lens fitting

Soft contact lens fitting

Toric Contact lens fitting

Reference books:

1. IACLE modules 1 -10
2. Contact Lens Practice- Nathan Efron. Elsevier Sciences. Third Edition
3. Contact Lenses- Philips Stone
4. Fitting guide for Rigid & soft contact lens: A practical Approach: Slatt & Stein

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PEDIATRIC AND GERIATRIC OPTOMETRY-PRACTICAL

Subject Code: MOPTS1-207

**L T P C
0 0 4 2**

Duration: 60 (Hrs)

Course Outcomes: Students will be able to learn about ocular examination of children and aged population through various diagnostic criteria and techniques

Experiments

- Assessment of Child Vision and Refractive Error
- Refractive Routines in the Examination of Children
- Cycloplegic Refraction
- Color Vision Assessment in Children
- Dispensing for the Child patient
- Pediatric Contact Lens Practice
- Dyslexia and Optometry Management
- Electrodiagnostic Needs of Multiple Handicapped Children
- Management Guidelines – Ametropia, Constant Strabismus
- Management Guidelines –Amblyopia
- Case history
- Assessment
- Application of devices.
- Rehabilitation.

Reference books:

1. Vision and Aging – A.J.ROSSENBLUM Jr. & M.W.MORGAN, Butterworth Heinemann 1993.
2. Low Vision principles & Practice- Christine Dickinson Butterworth-Heinemann, 1998
3. The art and Practice of Low Vision- Paul .B. Freeman & Randall. T. Jose, Butterworth-Heinemann, 1991