



**BHARATI VIDYAPEETH
(DEEMED TO BE UNIVERSITY), PUNE**

**Faculty of Medical Sciences
Master of Optometry
New Syllabus**

Bharati Vidyapeeth
University
Medical College
School of Optometry

Details of Teaching Syllabus
Master of Optometry (M.Optom.)

Syllabus topics for Master of Optometry (M.Optom.)

FIRST YEAR M.OPTOM. TEACHING SYLLABUS TOPICS

Subject Code	Name of Subject	Description
M 101	Applied Optics	Clinical, Visual & Dispensing Optics
M 102	Basic Sciences	Ocular Anatomy, Physiology, Pharmacology, Microbiology
M 103	Clinical Sciences	Eye checkup procedures, special investigations, instruments
M 104	Specialty subject	Contact Lenses, Binocular Vision & Ocular motility, Low vision and patient management
M 105	Comprehensive Practical	

Pattern of Examination at end of First Year M.Optom.

There will be total of 5 examination subjects for first year M.Optom. and examinations will be conducted for 100 marks for each subject.

Paper No	Name of Paper	Internal Marks	External		Total Marks
			Theory	Viva	
P 1	Applied Optics	25	50	25	100
P 2	Basic Sciences	25	50	25	100
P 3	Clinical Sciences	25	50	25	100
P 4	Specialty subject	25	50	25	100
P 5	Comprehensive Practical Exam	50	-	50	100
	Total				500

Two internal practical examination during the term will be conducted by internal examiners which will be added as internal marks out of 50 for P 5. A more comprehensive examination will be conducted during the university examination by the panel of examiners, which will include examining patients, specific investigations, and demonstration of certain optometric and clinical skills.

A comprehensive practical examination for 50 marks will be conducted by 2 examiners which will include examining patients, specific investigations and demonstrations of certain optometric and clinical skills.

SECOND YEAR M.OPTOM. TEACHING SYLLABUS TOPICS

Subject Code	Name of Subject	Description
M 201	Optics & Contact Lenses	Specialty fittings and advanced contact lenses
M 202	Clinical management in Orthoptics	Vision Therapy in Binocular Vision disorders
M 203	Elective: Dispensing Optics&Low Vision or PCR Techniques	Practical application of Dispensing & Low vision or PCR Techniques
M 204	Comprehensive Practical Exam	
M 205	Dissertation Thesis	

Pattern of Examination at end of Second Year M.Optom.

There will be total of 5 examination subjects for second year M.Optom. and examinations will be conducted for 100 marks for each subject.

P3 will be the electives which will be Dispensing Optics&Low Vision or PCR Technique

Paper No	Name of Paper	Internal Marks	External		Total Marks
			Theory	Viva	
P 1	Optics and Contact Lenses	25	50	25	100
P 2	Clinical management in Orthoptics	25	50	25	100
P 3	Electives	25	50	25	100
P 4	Comprehensive Practical exam	50	-	50	100
P 5	Dissertation & Thesis	50	-	50	100
	Total				500

Two practical examination during the term will be conducted by internal examiners which will be added as internal marks out of 50 for P 4. A more comprehensive examination will be conducted during the university examination by the panel of examiners, which will include examining patients, specific investigations, and demonstration of certain optometric and clinical skills.

A comprehensive practical examination for 50 marks will be conducted by 2 examiners which will include examining patients, specific investigations and demonstrations of certain optometric and clinical skills.

A full research dissertation thesis will have to be completed under the supervision of the Project Guide / Internal teaching faculty and submitted to the school of optometry as per specific instruction given in that particular academic year. It will be reviewed and the thesis will be given marks out of 50, by internal teaching faculty members, which will be added as internal marks.

Project work and practical training

1. All students admitted to the M.Optom. course will have to be involved in teaching undergraduate students for lectures, demonstrations and hands on practical sessions.
2. As part of the project work during the first year M.Optom. every student will have to document minimum 100 clinical cases seen and clinically examined by them during their clinical exposure under the supervision by the teaching faculty.
3. Two copies of this project based on these 100 clinical cases will have to be submitted on or before the specific date declared on the notice board.
4. Every student will have to do a dissertation thesis during the Second year M.Optom. and will have to get it approved and accepted in writing by the college internal scientific committee, at School of Optometry on or before the specific date declared on the notice board.

5. Two copies of this dissertation project will have to be submitted minimum 2 months before the final second year examinations or the specific date declared on the notice board.
6. Some post graduate students may have to work with the Ophthalmic and Optical industry in their projects of practitioner education, research and other related activities which will be given as assignments by the Bharati Vidyapeeth School of Optometry.

Examination & Rules of passing for First and Second year M.Optom.

1. Internal Examinations = The faculty will conduct the internal exam as per schedule prepared by School of Optometry.
2. Term end Examinations = External Viva and practical examinations for first and second year M.Optom. will be conducted every year as per the time table to be prepared from time to time. The External Viva and Practical examinations will be conducted by a panel of two examiners for every subject and they will be responsible for checking the theory examination papers for that subject.
3. First Year M.Optom. passing = The internal and external examination marks will be added as the final marks of that subject. Only when the student secures minimum 50% marks (Internal + External = Combined) in all subjects of the first year, he/she will be declared pass and will be promoted to the second year M.Optom.
4. Allowed To Keep Term = If the student secures minimum 50% marks in **at least three subjects** of First Year M.Optom., he/she will be allowed to keep term for second year. However he/she will have to pass in **all the subjects** of first year M.Optom. in order to become eligible to apply/appear for second year final M.Optom. University examinations.
5. Repeat Term = If the student fails in four or all the five subjects of the first year, he/she will be asked to pay the University examination fees proportionate to the number of subjects failed and then appear for the mid term external examinations in those subjects in which he/she has failed earlier. But they are not required to appear for internal examinations and neither repeat the project.
6. Mid term Examinations = University will conduct mid term examinations for M.Optom. as per the time table to be prepared from time to time, for all students who have not passed in the Annual examinations.
7. Second Year M.Optom. passing = The internal and external examination marks will be added as the final marks of that subject for each year. Only when the student secures minimum 50% marks (Internal + External = Combined) in all subjects of both the years and has completed the project work and dissertation thesis in all respects, he/she will be declared to have completed the M.Optom. course and will be eligible for post graduate degree of Master of Optometry (M.Optom.).
8. Repeat Term = If the M.Optom. student fails in any subjects of the second year, he/she will be asked to pay the University examination fees. Then he/she can appear for the University examination in those subjects in which he/she has failed earlier.

Bharati Vidyapeeth Deemed to be University Medical College School of Optometry
Master of Optometry (M.Optom.) course

9. Repeat Dissertation = Only if the student has failed in Subject P5 of the second year M.Optom., the student will be required to either repeat the same dissertation project OR choose a different dissertation project and appear for the annual examination. He/she cannot take the mid term examination for this subject.
10. If any student fails three times successively in the same subject at the University examinations for either first or second year M.Optom., he/she will not be allowed to continue the M.Optom. course and his/her admission will stand cancelled.

There will be total of 5 examination subjects for first year M.Optom. and examinations will be conducted for 100 marks for each subject.

Paper No	Name of Paper	Internal Marks	External		Total Marks
			Theory	Viva	
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P 2	Basic Sciences	25	50	25	100
P 3	Clinical Sciences	25	50	25	100
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P 5	Comprehensive Practical Exam	50	-	50	100
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There will be total of 5 examination subjects for second year M.Optom. and examinations will be conducted for 100 marks for each subject.

Paper No	Name of Paper	Internal Marks	External		Total Marks
			Theory	Viva	
P 1	Optics and Contact Lenses	25	50	25	100
P 2	Clinical management in Orthoptics	25	50	25	100
P 3	Dispensing Optics & Low Vision	25	50	25	100
P 4	Comprehensive Practical exam	50	-	50	100
P 5	Dissertation & Thesis	50	-	50	100
	Total				500

Ranking of candidates

The result of both first and second year examinations will be finalized and declared by the University as per the time table notified from time to time.

Students will be awarded class on the basis of the total aggregate marks for the BOTH the examinations of first and second year, as follows =

50% and more but less than 55 % aggregate marks	= Pass Class
55% and more but less than 60% aggregate marks	= Second Class
60% and more but less than 70% aggregate marks	= First Class
70% and above	= First Class with distinction

Award of the degree

A student, who has secured not less than 50% marks in every subject of the Final Second year M.Optom. Examination, will be eligible for the conferment of the “Master of Optometry (M.Optom.)” post graduate degree by the Bharati Vidyapeeth Deemed to be University, Pune.

Award of Gold medal

Gold medal will be awarded to the student who secures maximum marks in first and second year M.Optom. Added together, which is out of 1000. The candidate should have cleared each and every subject in every term in the first attempt.

Format for the first and second year M.Optom. Examination Theory Papers

Each theory University examination paper for first and second year M.Optom. course will be of total 50 marks and 2 hours duration.

Section A of total 20 marks – It will have objective type questions like Multiple Choice Questions, Fill in the blanks, match the following, True or False, etc.

Section B of total 30 marks – It will have seven questions (5 marks each) out of which any six have to be answered.

M.Optom. First Year

Subject Code 101

Applied Optics

PART 1 VISUAL AND CLINICAL OPTICS

Study topics for Visual Optics

- 1) Refractive status of the eye
 - a) Emmetropia.
 - b) Ametropia – Myopia, Hyperopia, Astigmatism.
 - i) Prevalence
 - ii) Classification and refractive components
 - iii) Progression
 - c) Presbyopia.
 - d) Etiology of refractive anomalies.
- 2) Epidemiology of Ametropia.
 - a) Incidence and distribution of refractive errors in general population.
 - b) Changes in refraction with Age.
 - c) Hereditary and environmental factors.
- 3) Measurement of the optical constants of the eye
 - a) Objective methods of refraction
 - i) Retinoscopy - principle and methods.
 - ii) Pharmacology and refraction.
 - iii) Other objective methods of refraction.
 - b) Subjective methods of refraction
 - i) Review of subjective refractive methods.
 - ii) Monocular and Binocular subjective refraction.
 - iii) Usefulness of various methods in finalising the prescription.
- 4) Management of patient with refractive error
 - a) Analysis, interpretation and prescription for Ametropias and heterophorias
 - b) Guidelines for correction of refractive errors based on –
 - i) Visual needs of the patients.
 - ii) Age and status of accommodation.
 - c) Modes of correction – spectacles, contact lenses, refractive surgery
 - d) Special conditions
 - i) Infants, Toddlers and children
 - ii) Amblyopia and Strabismus
 - iii) Anisometropia and Aniseikonia
 - iv) High refractive error – Uniocular and binocular conditions
 - v) Irregular Corneal Astigmatism
 - vi) The Elderly patients with Low Vision

Study topics for Clinical Optics

- 1) Visual system and Visual perception
- 2) The Eye as an optical system
- 3) Visual Acuity and contrast sensitivity
- 4) Accommodation
 - a) The basics – definition, mechanism and methods of measurement.
 - b) Far and Near point of accommodation, range of accommodation, amplitude – significance and application in clinical management.
 - c) Anomalies of accommodation – etiology and management.

- 5) Accommodation, the pupil and Presbyopia
 - a) The Near addition and Ametropia
 - b) Intermediate addition and Visual requirements
- 6) Convergence
 - a) The basics – definition, mechanism and methods of measurement.
 - b) Types and components of convergence.
 - c) Anomalies of Convergence – etiology and management.
 - d) Near point of convergence – significance.
- 7) Accommodative Convergence/ Accommodation ratio

PART 2

DISPENSING OPTICS

Study Topics for Dispensing Optics

Ophthalmic Lenses

- 1) Introduction, terminology, definitions – Prisms, Lenses, Frames, Spectacles.
 - a) Prisms – properties and uses in Optometry.
 - b) Lenses – Definition, Terminology, forms and uses in optics.
 - c) Neutralization of lenses – Lensometry, hand neutralization – practical aspects.
 - d) Prismatic effect, Centration – decentration, Prentice's rule – applications in practice.
- 2) Outline of lens surfacing and polishing, terminology used in Lens workshops
 - a) Ophthalmic raw materials – history and recent developments.
 - b) Manufacturing of Ophthalmic lenses – Glass, Plastics and new generation materials.
 - c) Lens Standards for ophthalmic lenses – FDA, FTC, ANSI, and ASTM.
- 3) Ophthalmic lens materials and designs types
 - a) Ophthalmic lens material types
 - i) Glass – Mineral
 - ii) Plastics – CR-39, Polycarbonate, Trivex, NXT, MR-series.
 - b) Aspheric, High Index lenses and special purpose lenses.
 - c) Bifocal and multifocal lenses.
 - d) Absorptive and protective lenses.
 - e) Sunglasses – Tinted, Photochromic, Polaroid lenses.
 - f) Various surface treatments on Ophthalmic lenses
 - i) Anti-reflection coatings – theory and practical aspects
 - ii) Toughening – methods, uses and applications
 - iii) Other lens coatings – scratch resistance, color, antifog, mirror, edge, multicoat, recent surface coatings.
- 4) Progressive and Varifocal lenses.
 - a) Properties and materials.
 - b) Advantages and limitations of progressive lens.
 - c) Indications and contraindications of progressive lens.
 - d) Selecting appropriate progressive lens.
 - e) Precautions while prescribing progressive lenses.
 - f) Identifying and neutralizing progressive lenses.

Spectacle Frames

- 1) History, Nomenclature, classification and terminology in Spectacles.
- 2) Types, parts and various shapes of spectacle frames and recent advances.
- 3) Raw materials for spectacle frames and manufacturing methods.
- 4) Spectacle frame measurements and markings.
- 5) New trends – latest developments in spectacle frames.
- 6) Frame measurements and markings, Frame selection.

7) Measuring Inter Pupillary Distance.

Subject Code 102

Basic Sciences

Study topics – Ocular Anatomy

- 1) Outline of Visual system – latest theories and developments.
 - a) Three coats of the eyeball – Outer, Middle, Inner.
 - b) Conjunctiva & Sclera, Cornea & Limbus – regions, layers, functions, significance.
 - c) Uvea – Choroid, Iris, Pupil, Ciliary body, ciliary muscles, processes – layers, functions, significance.
 - d) Retina - anatomical structure, layers – significance, distribution of rods and cones.
 - e) Anterior chamber – structure, depth significance.
 - f) Aqueous humor – secretion, and drainage aspects.
 - g) Crystalline Lens – structure, growth, function, significance, metabolism – ageing process.
- 2) Blood supply and Cranial nerve supply to all parts of eye and adnexa.
- 3) Visual pathway – complete structure, significance.
- 4) Lacrimal system – apparatus, secretion and drainage systems.
- 5) Tear Film – layers, functions, significance.
- 6) Ocular embryology, Time relationships in ocular embryology.
- 7) Understanding of Genetics for Optometric counselling.

Study topics – Ocular Physiology

- 1) Visual acuity – recent advances in assessment, Visual perception – optical illusions.
- 2) Dark and light adaptation – significance and tests involved – significance to practice.
- 3) Colour Vision – theories, defects – methods of measurement and classification.
- 4) Visual Fields –
 - a) Definition, significance, methods of examination – conventional Vs latest trends.
 - b) Defects – types, description, significance on methods of evaluation.
- 5) Intra-Ocular-Pressure – significance, normal features, age variations, methods of measurements – outline and significance.

Study Topics – related Pathology and Microbiology

- 1) Infections, Inflammation and repair mechanisms.
- 2) Allergic reactions in ocular tissues.
- 3) Bacteria, Virus, Fungus and their features for differentiation.
- 4) Common bacterial infections of the eye.
- 5) Common fungal infections of the eye.
- 6) Common viral infections of eye.

Study Topics – Ocular Pharmacology

- 1) Classification of Ophthalmic drugs.
- 2) Sympathomimetics & Sympatholytics.
- 3) Parasympathomimetics & Parasympatholytics.
- 4) Diagnostic drugs used in optometry - Dyes and stains.
- 5) Antibacterial, Antifungal agents.
- 6) Steroids and Non-steroidal anti-inflammatory drugs

Subject Code 103 Clinical Sciences

PART 1 EYE EXAMINATION

Study topics for

- 1) General outline of case paper for various requirements
 - a) Optometry OPD for private clinics, for hospital department.
 - b) Contact Lens clinic, Orthoptic clinic, Low Vision clinic, etc.
 - c) Vision screening eye camps in schools, adult age group, senior citizens, special groups like computer Institutes, etc.
- 2) Methods of record keeping methods – advantages and limitations of
 - a) Conventional methods using printed case papers
 - b) Computers and latest technology
- 3) The Patient History – components and their significance
 - a) Problem oriented optometric records
 - b) Demographic information and patient profile
 - c) Health and medications
 - d) Family, Ocular and birth history
 - e) Chief complaint
- 4) The Preliminary examination procedures
 - a) Visual Acuity and Colour Vision
 - b) Contrast Sensitivity and Glare
 - c) Ocular motility procedures
 - d) Anterior segment evaluation
 - e) Posterior segment evaluation
- 5) Vision Screening, new subjective refractors and techniques.

PART 2 SPECIAL INVESTIGATIONS AND INSTRUMENTS

Study Topics

- 1) Refraction Instruments – latest designs and features available.
 - a) Vision test charts, Projection charts and illumination of the consulting room.
 - b) Refraction trial cases and Refractor (phoropter) units.
 - c) Instruments of the future.
- 2) Orthoptic Instruments – latest designs and features available.
 - a) Amblyoscopes and Computer Orthoptics.
- 3) Slit lamp bio-microscopes – latest designs and features available.
- 4) IOP measurement, Tonometers – latest designs and features available.
- 5) Corneal examination equipment – latest designs and features available.
 - a) Video Keratotomy.
 - b) Corneal Topography
- 6) Anterior segment ophthalmic photography – latest designs and features available.
- 7) Clinical Electrophysiology – introduction and significance of ERG, EOG, VER.

Subject Code 104 Specialty subject

PART 1 CONTACT LENSES

Study topics for

- 1) Related ocular anatomy and physiology.
- 2) Latest trends in contact lens raw materials and methods of manufacturing.

- 3) Discussion with patient, choice of lens type.
- 4) Fitting philosophies of contact lens – new trends.
- 5) Pre-Fitting examination – steps, significance, recording of results.
- 6) Contact lens options for Astigmatism – RGP and Soft contact lens designs.
- 7) Calculation and finalizing of contact lens parameters.
- 8) Ordering contact lens – writing a prescription to the laboratory.
- 9) Fitting Soft lenses from stock – advantages, limitations, precautions.
- 10) Fitting evaluation of RGP and Soft contact lenses.
- 11) Components of Lens Care systems – new trends.
- 12) Instructions to patients and dispensing contact lenses.
- 13) Teaching the patient to insert and remove RGP and Soft contact lenses.
- 14) Common handling instructions to the Contact lens wearers.
- 15) After care and follow-up for contact lens patients.
- 16) Patient Problems – identification, differential diagnosis and management.
- 17) Ocular Complications of contact lens wear.
- 18) Practice management in contact lenses.

PART 2

BINOCULAR VISION & OCULAR MOTILITY

Study topics for

- 1) Extra Ocular and Intra Ocular Muscles of the eye – related Anatomy & Physiology.
 - a) Ocular movements – Center of rotation, Axes of Fick, Uniocular & Binocular movements - fixation, saccadic & pursuits, Version & Vergence.
 - b) Laws of ocular motility - Donders' and Listing's law, Sherrington's law, Hering's law
 - c) Vision efficiency skills – Saccadic and pursuit eye movements, fixation, accommodation and sensory fusion.
- 2) Binocular Vision and Space perception development.
 - a) Sensory adaptations – Confusion, Suppression, Abnormal Retinal Correspondence and Blind spot syndrome.
 - b) Fusion, diplopia, correspondence.
 - c) Stereopsis, Panum's area, Binocular Single Vision.
 - d) Stereopsis and monocular clues - significance.
 - e) Egocentric location, clinical applications.
 - f) Theories of Binocular vision – Alternation, Projection and Motor theories of visual orientation.
 - g) Binocular Vision – Normal and Abnormal Retinal Correspondence.
- 3) Outline of Routine Orthoptic examination procedures.
 - a) Subjective symptoms – description and significance.
 - b) History – recording and significance.
 - c) Routine & Special investigations for Binocular Vision & Ocular motility.
 - d) Qualitative and quantitative diagnosis of strabismus.
 - e) Diagnosis, prognosis & management methodologies.
- 4) Clinical picture of types of squints
 - a) Pseudo-strabismus.
 - b) Eso and Exo deviations
 - c) Cyclo deviations and Nystagmus
 - d) A and V Patterns
 - e) Paralytic squint - Concomitant, Non-concomitant
 - f) Special forms of squint.
- 5) Orthoptic Instruments.
- 6) Genetics in occurrence of squint and binocular vision problems.

PART 3 **LOW VISION AND PATIENT MANAGEMENT**

Study topics for

- 1) Low Vision – causes, refractive state and counselling of patient with low vision, low vision related rehabilitation network.
- 2) Definitions (W.H.O. and Lighthouse), identification of low vision patients, psychosocial implications of visual impairment.
- 3) Examination of patient with Low Vision
 - a) Recording history, Refraction and related eye examinations and special investigations.
 - b) Refractive considerations – conventional and prism spectacles, prismo-spheres.
 - c) Effects of eye condition on Functional Vision.
 - d) Diagnostic procedures in low vision cases.
- 4) Genetics and Low Vision, common disorders encountered in low vision.
- 5) Optics of Low Vision Lenses, magnifications with calculations associated with low vision systems.
- 6) Low vision distance systems, spectacles, contact lenses, telescopes and tele-microscopes.
- 7) Low vision near systems, microscopes, magnifiers, electronic magnification systems
- 8) Non- optical devices.
- 9) Peripheral field defects and their rehabilitation.
- 10) Latest Computer assistive technology.
- 11) Variables affecting success and how to improve results.
- 12) New developments and future directions.

Support subject

Research Methodologies & Statistics

Study topics for

1. Introduction to Research design
 - Definition, characteristics, purpose and kinds of research.
 - Ethics and Overview of research process.
 - Statement of the problem and research objectives.
2. Methods of Data Collection and Research Proposal
 - Techniques – Questioning, Observation and measurement.
 - Instruments – Questionnaire, Interview Schedule, Checklist, rating scale.
 - Writing a research proposal.
3. Implementation of Research Plan
 - Collection of data.
 - Data analysis – types of data, data organization and summarization.
 - Structure of statistical methods.
 - Interpretation and presentation of data.
4. Research Report
 - Composition and Format.
 - Application of result – critical analysis of reach report and publication.
5. Introduction to Statistics
6. Measures of Variability
7. The Normal Distribution

Support subject

Education and Teaching

Study topics for

1. Introduction
 - Aim of education and philosophy

- Current trends and issues in education.
2. Concept of Teaching and Learning
 - Definition of teaching and learning.
 - Relationship between teaching and learning.
 3. Guidance and Counselling
 - Principles, Philosophy, purpose and concept of guidance and counseling.
 - Difference between counseling and guidance.
 - Types of guidance and counseling – Group and Individual.

M.Optom. Second Year

Subject Code 201

Optics and Contact Lenses

Study topics for

1. Co-relation of Ophthalmic, Visual and Clinical Optics.
2. Optical management of refractive errors – new modalities.
3. Advanced techniques of subjective and objective refraction.
4. Toric corneas, Irregular corneas and Keratoconus
5. Contact lenses for presbyopes
6. Special considerations for fitting contact lenses in children
7. Contact lenses in sports
8. Extended wear lenses
9. Dry eye and contact lenses.
10. Therapeutic contact lenses.
11. Orthokeratology
12. Disposables and Frequent Replacement Lenses.
13. Cosmetic and prosthetic contact lenses.
14. Diagnostic contact lenses.
15. Cornea in contact lens wear.
16. Ocular complications of contact lens wear.
17. Care and maintenance of contact lenses.
18. Future of contact lenses and optometry practice.

Subject Code 202

Clinical Orthoptics

- 1) Amblyopia
 - a) Definition & types, Investigations, Management
 - b) Recent development in clinical management of Amblyopic patient.
- 2) Non-surgical treatment and Management in
 - a) Refractive Amblyopia.
 - b) Abnormal Retinal Correspondence.
 - c) Accommodation and Convergence anomalies.
 - d) Types of Strabismus.
 - e) Low AC/A and High AC/A ratio conditions.
 - f) Nystagmus
- 3) Vision Therapy eye exercises – latest techniques and home exercises.
 - a) Introduction and general concepts.
 - b) Anaglyphs and Polaroid filters.
 - c) Lenses, Prisms and mirrors.
 - d) Stereoscopes, after images, entoptic phenomena.
- 4) Patient and practice management issues with using Vision Therapy.

Subject code 203

Dispensing Optics and Low Vision

- 1) Optical Instruments
 - a) Lensometer and Focimeters – latest designs and features available.
 - b) Optical lens testing equipments
 - c) IPD measurement – techniques and instruments involved
- 2) Dispensing counter organization.
- 3) Types of human faces and Cosmetic dispensing of spectacles.
- 4) Types of spectacle frames available – shapes, material, colour.
- 5) Functional dispensing – various professions and age groups.
- 6) Special purpose spectacles and accessories.
- 7) Ophthalmic lens materials – newer trends.
- 8) Lens enhancements – considerations for prescribing.
- 9) Special measurements for fitting special lenses – Bifocals, multifocals, prism lenses, etc.
- 10) Final checking, adjustments and dispensing to prescription spectacles
- 11) Patient complaints, handling and correction
- 12) Spectacle options for patients with
 - a) Photophobia and glare
 - b) Presbyopia
 - c) High refractive errors.
 - d) Squint and oculo-motor problems.
- 13) Guidelines for safety standards for spectacles in
 - a) Children
 - b) Sports
 - c) Uniocular patient
- 14) Industrial safety eye wear.
- 15) Basics of low vision (as per Subject Code 104, Part 3)
- 16) Prescribing for Low Vision
 - a) Aids for Distance Vision
 - b) Aids for Near Vision
 - c) Guide to selecting low vision devices.
 - d) Optical devices to help people with field defects.
 - e) Non-optical devices.
- 17) Demonstrating and teaching the patient to use low vision devices.
- 18) Light, glare and contrast in low vision care and rehabilitation.

Subject code 204

Professional Optometry

PART 1

USE OF COMPUTER TECHNOLOGY IN OPTOMETRY

- 1) Introduction to Computers – hardware and software.
 - a) History, Definitions Applications, Advantage, Limitations and types of computers.
 - b) System unit – its parts.
 - c) RAM, ROM, keyboard.
 - d) Storage devices – floppies, CD ROM drive, other devices.
 - e) Monitors and display units, LCD projectors.
 - f) Soft ware its evolution and generation, classifications, Application.
- 2) Introduction to operating systems and basic software use - Microsoft Windows
 - a) Features, advantage and types.
 - b) Program manager along with all menus short cut keys.
 - c) Modes of windows, options in dialogue box.
 - d) Paint brush, calculator, Clock, Calendar – regional settings.

- e) Control panel and windows programs – write, paint brush.
 - f) Printing various types of documents and images.
- 3) Use of Word processors, Spreadsheet and presentation programs.
- a) MS-Word
 - i) Menu bars- file edit, view, tools, window, insert.
 - ii) Format borders, frame shading handling text, spell check, thesaurus.
 - iii) Drawing toolbar, annotations, headers and footers.
 - iv) Templates, styles, auto save, auto correct, auto format, auto text.
 - v) Page set up and printing Mail merge.
 - b) MS-Excel
 - i) Writing formulas and copying them, auto sum.
 - ii) Sorting, drawing tool bar, short cut keys.
 - iii) Introduction, features, uses, elements of power point.
 - iv) Cursor movement keys short cut keys.
 - c) MS-Power point
 - i) Creating a new presentation.
 - ii) Standard and formatting tool bars.
 - iii) Adding text in slide view, outline view.
- 4) Use of database software for clinic records.
- 5) Use of financial accounting software.
- 6) Use of Personal computers and specialised software in Optometry.
- 7) Introduction to networking – Local networks, managing networked computers.
- 8) Internet, the World wide web and emails
- a) Internet browsing, search engines and finding information
 - b) Email and its uses.
 - c) Websites related to optometry.

PART 2 PRACTICE MANAGEMENT

- 1) Public Relations – its distinction from publicity, propaganda and advertising.
- 2) Benefits of Public Relations – Image building, promotion of product or services.
- 3) Public speaking – Microphone technique – Telephone manners.
- 4) Research in P.R: Opinion and panel research – drawing up of a questionnaire – interpreting the results.
- 5) Need of customers – efficiency and effectiveness of customer service – feedback and suggestion system.

PART 3 PROFESSIONAL & BUSINESS ETHICS

- 1) Various laws governing medical and para-medical professions in the country.
- 2) Consumer Act with respect to Optometry and dispensing of Optical aids.
- 3) Issues pertaining to International and national Optometry.
- 4) Present rules and regulations – laws regarding Optometry profession, private practice, optical product manufacturers and Optical dispensing in India.
- 5) Ethics – general and special optometric professional ethics.

PART 4 FINANCE AND ACCOUNTING MANAGEMENT

- 1) Terms used in accounts, Principles of accountancy.
- 2) Ledger and ledger posting and Trial balance, Depreciation and other adjustments.
- 3) Subsidiary books, Petty cash book, Sales register, Purchase register, Stock register.
- 4) Balance sheet and profit and loss accounts statements.
- 5) Income tax and Sales tax laws in our country. (General ideas only).
- 6) Making a business project report and financial viability of a project.
- 7) Maintaining accounts for an optometric or optical establishment

PCR Techniques

DNA Amplification PCR- Process of setting up a PCR reaction- Different Approaches to amplify a DNA Latest PCR methodologies (Multiplex PCR, LAMP, etc.)- Primers for LAMP, Multiplex PCR and RPA- Basics and Details of PCR- Different factors- Optimal values- PCR setup process of qPCR, RT PCR & qRT PCR- Role of PCR & RT-PCR in numerous fields- Use in Diagnostics and Research- Past, Present & Future of PCR- Latest Discoveries (RPA) Scope of PCR in Research.

Primer Design Factors to be considered while designing a primer (Temperature, GC, etc.)- Different types of primer based on the PCR Type- Primer design for a straightforward PCR & a qPCR Primer design for a RT PCR & a qRT PCR.

Essential Text and study Books for M. Optometry

1. Bennett's Ophthalmic Prescription Work - Bennett
2. Binocular Vision and Ocular Motility - Von Noorden
3. Borish's Clinical Refraction - Borish
4. Business Aspect of Optometry - Classe & Lakin
5. Business Aspects of Optometry – John Classe
6. Business Awareness for Optometrists – Nizar Hirji
7. Case presentations in medical ophthalmology - Kanski
8. Clinical Decision Making in Optometry – Ellen Ettinger
9. Clinical Geriatric Eye Care – Joseph Maino, Sheree Aston
10. Clinical Management of Myopia – Theodore Grosvenor, David Goss.
11. Clinical Management of Strabismus – Elizabeth Caloroso.
12. Clinical Pediatric Optometry – Leonard Press, Bruce Moore.
13. Clinical Procedures for Ocular Examination – Carlson.
14. Clinical Procedures in Primary Eye Care – David Elliot.
15. Contact Lenses book with CD ROM – Stone & Philips
16. Contact Lenses the CLAO guide Vol 1 to 3 – Peter Castl
17. Corneal Physiology and Disposable Contact Lenses – Hikaru Hamano
18. Diagnosis of Defective Colour Vision – Jennie Birch
19. Dictionary of Visual Science – 4th Edition – Cilne, Hofstetter, Griffin
20. Drug Medication and the Eye – Michael Doughty
21. Dryness, Tears, and Contact Lens Wear – Gerald F Lowther
22. Environmental Vision – Donald Pitts.
23. Essentials of Low Vision Practice – Richard Brilliant.
24. Genetics for Primary Eye Care Practitioners – Helene Fatt
25. Geometrical, Physical and Visual Optics – Michael Keating
26. Management For Eye Car Practitioners – Irving Bennett
27. Management For Opticians – 2nd Edition – Thomas Appler
28. Marketing Managing and Contact Lenses – Robert Koetting
29. Myopia and near work – Mark Rosen Field
30. Ocular Manifestation of Systemic Diseases – Bernard Blaustein
31. Ophthalmic Lenses and Dispensing – With CD-ROM- MO Jalie
32. Ophthalmology Examination Techniques (Question and Answers) – David Broadway.
33. Ophthalmology: Clinical signs and differential diagnosis, 1998 - Kanski
34. Optometric Instrumentation – David Henson
35. Optometry - Keith Edwards
36. Physics for Ophthalmologists – Douglas Coster.
37. Pickwell's Binocular Vision Anomalies, 3rd edition, Bruce Evans.
38. Primary Care Optometry – Theodore.
39. Principle & practice of Ophthalmology – Peyman
40. Professional Communications in Eye Care – Ellen Ettinger
41. Scheiman – Optometric management of learning related vision disorders, 1994
42. Sports Vision – D.F.C. Loran
43. System of Ophthalmic Dispensing – 2nd Edition – Clifford Brooks, Irvin Borish
44. The Art & Practice of Low Vision – 2nd Edition – Paul Freeman
45. The eye and systemic disease – Kanski
46. The fine art of prescribing glasses – Benjamin Milder
47. Vision and Aging – 2nd Edition – Alfred Rosenbloom
48. Vision And Sports – James R Gregg
49. Vision therapy in primary care practice – Jerome Rosner
50. Work and the Eye, 2nd edition – Rachel North