



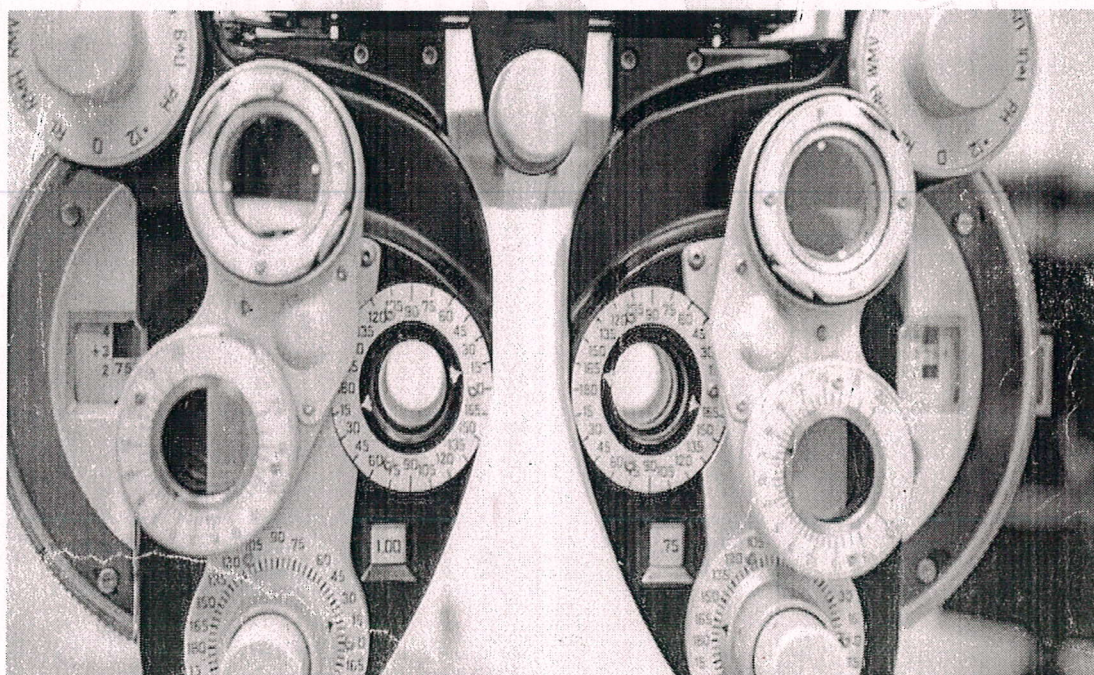
सत्यमेव जयते

**National Commission for Allied and Healthcare
Professions**

COMPETENCY BASED CURRICULUM

for

“OPTOMETRY”



As per the NCAHP Act -2021

Amey

Vishal

Shri

Dignity

[Signature]

[Signature]

[Signature]

APPROVED SYLLABUS

2025

स्वारथ्यम् सर्वार्थसाधनम्
NCAHP
Since-2021
Ministry of Health & Family Welfare

[Signature]

[Signature]

[Signature]

4.2 Master of Optometry

Master of Optometry

Eligibility for admission:

Bachelor of Optometry or equivalent from a recognised university with minimum 5.5 CGPA

Duration of the course

The M Optom post graduate degree program is of two years duration.

Duration of the course: 2 years or 4 semesters.

Total hours –2355 (including clinical and research)

Medium of instruction:

English shall be the medium of instruction for all the subjects of study and for examination of the course.

Attendance:

A candidate has to secure minimum-

1. 75% attendance in theoretical
2. 80% in Skills training (practical) for qualifying to appear for the final examination.

Credit details:

1 hour lecture per week	1 credit
2 hours of tutorials per week	1 credit
2 hours of clinics per week	1 credit

Passing Criteria

Total of 50% marks in IA + UE and 50% marks in UE.

Master of Optometry [2 year programme]

Proposed Scheme

Year	Semester	Credits	Hours
1	1	24.5	525
1	2	22	510
2	3	28	630
2	4	28	690
Total		102.5	2355

Credit details:

One credit implies one hour lecture per week or two hours of laboratory/practical per week or two hours of clinics per week or two hours of Research project per week

A semester is considered to have 15 weeks. For example,

1 credit course = 15 hours of lectures per semester

3 credits course = 45 hours of lectures per semester

0.5 credit course = 15 hours of practical/laboratory per week

CL	CP	L	P
3	0.5	45	15

CL: Credit for Lecture

CP: Credit for Practicals

L: Hours for Lecture

P: Hours for Practicals

Curriculum Outline

First Semester

Sl. No.	Course Titles	Hours/semester		
		Lecture	Practical	Total
MOP101	Applied ocular biology	45		60
MOP102	Advanced Ocular Diagnostics & Management	45		60
MOP103	Research Methodology and Biostatistics	30		60
MOP104	Intellectual property rights [#]	30		60
MOP105	Research Project-1 [#]	45		60
MOP106	Digital pedagogy and learning management [#]	15	15	30
MOP107	General Clinics-1		120	15
MOP108	Specialty Optometry Clinics-1		120	45
MOP109	Community Outreach-1		60	60
TOTAL		210	315	525

#Non-University Exams

NCAHP
Since-2021

Second Semester

Sl. No.	Course Titles	Hours/semester		
		Lecture	Practical	Total
MOP201	Specialized clinical optometry- Contact Lens-1	30		30
MOP202	Specialized clinical optometry- Low Vision Care	30		30
MOP203	Elective 1 [#]	30		30
MOP204	Research Project-2 [#]	60		60
MOP205	General Clinics-2		180	180
MOP206	Specialty Optometry Clinics-2		120	120
MOP207	Community Outreach-2		60	60
TOTAL		150	360	510

#Non-University Exams

Third Semester

Sl. No.	Course Titles	Hours per semester		
		Lecture	Practical	Total
MOP301	Specialized clinical optometry- Contact Lens – 2	30		30
MOP302	Specialized clinical optometry- Binocular Vision	30		30
MOP303	Specialized clinical optometry- Rehabilitation	30		30
MOP304	Elective 2 [#]	30		30
MOP305	Scientific communication [#]	30		30
MOP306	Research Project-3	60		60
MOP307	General Clinics-3		180	180
MOP308	Specialty Optometry Clinics-3		180	180
MOP309	Community Outreach-3		60	60
TOTAL		210	420	630

#Non-University Exams

Fourth Semester

Sl. No.	Course Titles	Hours per semester		
		Lecture	Practical I	Total
MOP401	Specialized clinical optometry - Vision Therapy and Neuro Optometry	30		30
MOP402	Elective 3 [#]	30		30
MOP403	Research Project-4	90		90
MOP404	General Clinics-4		240	240
MOP405	Specialty Optometry Clinics-4		240	240
MOP406	Community Outreach-4		60	60
TOTAL		150	540	690

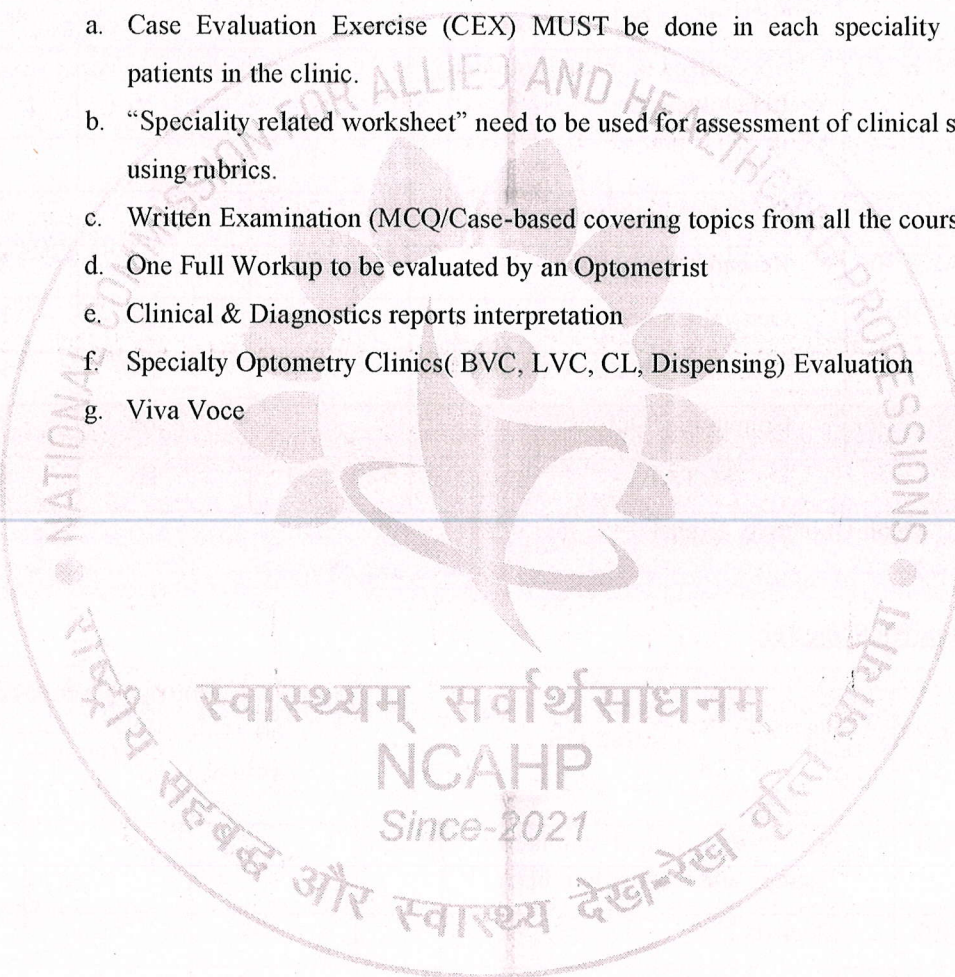
#Non-University Exams

Assessment:

Assessments should be completed by the academic staff, based on the compilation of the student's theoretical & clinical performance throughout the training programme. To achieve this, all assessment forms and feedback should be included and evaluated.

Clinical subjects MOP107, MOP108, MOP109, MOP205, MOP206, MOP207, MOP307, MOP308, MOP309, MOP404, MOP405, MOP406 need to follow the assessment pattern given below:

- a. Case Evaluation Exercise (CEX) MUST be done in each speciality with patients in the clinic.
- b. "Speciality related worksheet" need to be used for assessment of clinical skills using rubrics.
- c. Written Examination (MCQ/Case-based covering topics from all the courses)
- d. One Full Workup to be evaluated by an Optometrist
- e. Clinical & Diagnostics reports interpretation
- f. Specialty Optometry Clinics (BVC, LVC, CL, Dispensing) Evaluation
- g. Viva Voce



[Handwritten signature]

[Handwritten signature]

[Handwritten signature]

First Semester

APPLIED OCULAR BIOLOGY

INSTRUCTOR IN CHARGE: A postgraduate or PhD in basic sciences with relevant exposure to optometry.

CL	CP	L	P
3	0	45	0

COURSE DESCRIPTION: This course is designed to give the learners an overview about the basic science of the eye and clinical relevance. Applications of concepts in the basic biomedical sciences such as Anatomy, Physiology, Biochemistry, Microbiology, Genetics, Immunology, and Pathology will be discussed in the context of General physiology as well as ocular and clinical conditions.

OBJECTIVES: At the end of the semester, the student should be able to:

1. Explain ocular anatomy, and physiology of visual system relevant to eye and vision care
2. Demonstrate an understanding of genetics, microbial infections of the eye and ocular pathology relevant to ocular science
3. Gain knowledge about cell biology and ocular biochemistry, immunology, the basics of pharmacology and ocular pharmacology relevant to ocular science.

TEXT BOOK AND REFERENCE BOOK:

J. V. Forrester, A. D. Dick, P. G. Mcmenamin, Fiona Roberts, Eric Pearlman, The Eye: Basic Science in Practice, 4/e., Elsevier. 2016

PREREQUISITES: Ocular Anatomy and Physiology, Biochemistry, Microbiology, Genetics, Immunology and Pathology

COURSE PLAN:

Unit	Topic	Hours
1	Anatomy of Eye and Orbit: Osteology of orbit, Orbital contents – Extra Ocular Muscles- Blood vessels of the orbit – Cranial Nerves associated with eye and orbit –Ocular Adnexa – Muscle of eye lids and adjacent face - Anatomy of the visual pathway. Physiology of Vision and the Visual System: Light detection and Dark adaptation – Visual acuity and contrast Sensitivity – Clinical Visual Electrophysiology – Color vision – Monocular versus Binocular vision – Ocular movement: Physiology – Psychophysical basis for clinical tests	15
2	Genetics: Chromosome and Cell division –Molecular genetics– Clinical Genetics –Population genetics–Gene cell differentiations and Cell based therapy: Molecular genetics and ophthalmology Microbial Infections of the Eye: Introduction: Microbes in the environment - Host defense at the ocular surface: Physical barriers – Adaptive immunity to microbial infection – Ocular infections worldwide: viral, Bacterial, fungal, protozoan infections of the eye – Ocular infections in developing countries. Pathology: Introduction – Cell and Tissue damage, Mechanism of cell death – Inflammation –Neoplasia – Hamartomas – Choristomas – Teratoma –Tumors	15
3	Biochemistry: Biochemistry of the ocular surface, tear film, lacrimal gland sections, mucus layer, the conjunctiva, the lids , cornea and sclera, uveal tract- Inborn errors of metabolism and the eye, Metabolic diseases General and Ocular Pharmacology: Introduction - Pharmacokinetics– Pharmacodynamics –Mechanism of ocular drug absorptions –Routes of administration – Delivery methods - Drug Vehicles - Advanced ocular delivery systems – Ocular toxicity from systemic administrations of drugs Immunology: Innate and Acquired immunity – Initial response of the host to injury – Acute and Chronic Inflammation – Development of adaptive immunity and immunological memory – Organization of immune system – Antigen recognition – T cell activation – The eye and the immune system	15

ADVANCED OCULAR DIAGNOSTICS AND MANAGEMENT

CL	CP	L	P
3	0	45	0

INSTRUCTOR IN CHARGE: A postgraduate or PhD in basic sciences with relevant exposure to optometry.

COURSE DESCRIPTION: This course is designed to provide exposure to diagnostics to ocular conditions and management options for ocular diseases.

OBJECTIVES: At the end of the course the student will be able to:

1. Interpret the findings for diagnostics of ocular diagnostics
2. Demonstrate an understanding on management options for ocular diseases
3. Gain knowledge about management options for ocular diseases

TEXT BOOK AND REFERENCE BOOK:

1. Nicholas R Galloway, Common Eye Diseases and their management 3rd Edition.
2. Amar Agarwal. (2011) Diagnostic and Imaging techniques in Ophthalmology.

PREREQUISITES: Ocular Anatomy and Physiology, Ocular Diseases, Optometric Instrumentation

COURSE PLAN:

Unit	Topics	Hours
1	Ocular photography: External, Anterior (Slit lamp and Gonio photography), Posterior (Fundus Photography, Fundus Autofluorescence, Fundus Fluorescein Angiography, Indocyanine Green Angiography) Ultrasonography: (Ultrasound biomicroscopy, A-scan ultrasonography, B-scan ultrasonography, Pachymetry) Ocular Surface: (Meibography, Keratography, Corneal Biomechanics)	10
2	Anterior Segment Diagnostics: Confocal Microscopy, Specular microscopy, Corneal Topography, Corneal Tomography, Anterior Segment Optical Coherence Tomography, Pentacam, Aberrometry	10
3	Posterior Segment Diagnostics: Posterior Segment Optical Coherence Tomography (Spectral Domain OCT, Swept Source OCT, OCT Angiography), Ocular Electrodiagnostics (ERG, MfERG, VEP, EOG), Dark Adaptometry	10
4	Clinical management of ocular conditions: Overview of drugs used in treatment of ocular disease, Overview of laser and surgical interventions for ocular disease, Vertical Integration of all treatment options of ocular disease with special emphasis on optometric management	15

RESEARCH METHODOLOGY AND BIOSTATISTICS

CL	CP	L	P
2	0	30	0

INSTRUCTOR IN CHARGE: Biostatistician/Epidemiologist or Higher optometry holder with experience in biostatistics and research methodology

COURSE DESCRIPTION: The objective of this module is to help the students understand the basic principles of research and methods applied to draw inferences from the research findings.

OBJECTIVES: At the end of the course, the student should be able to:

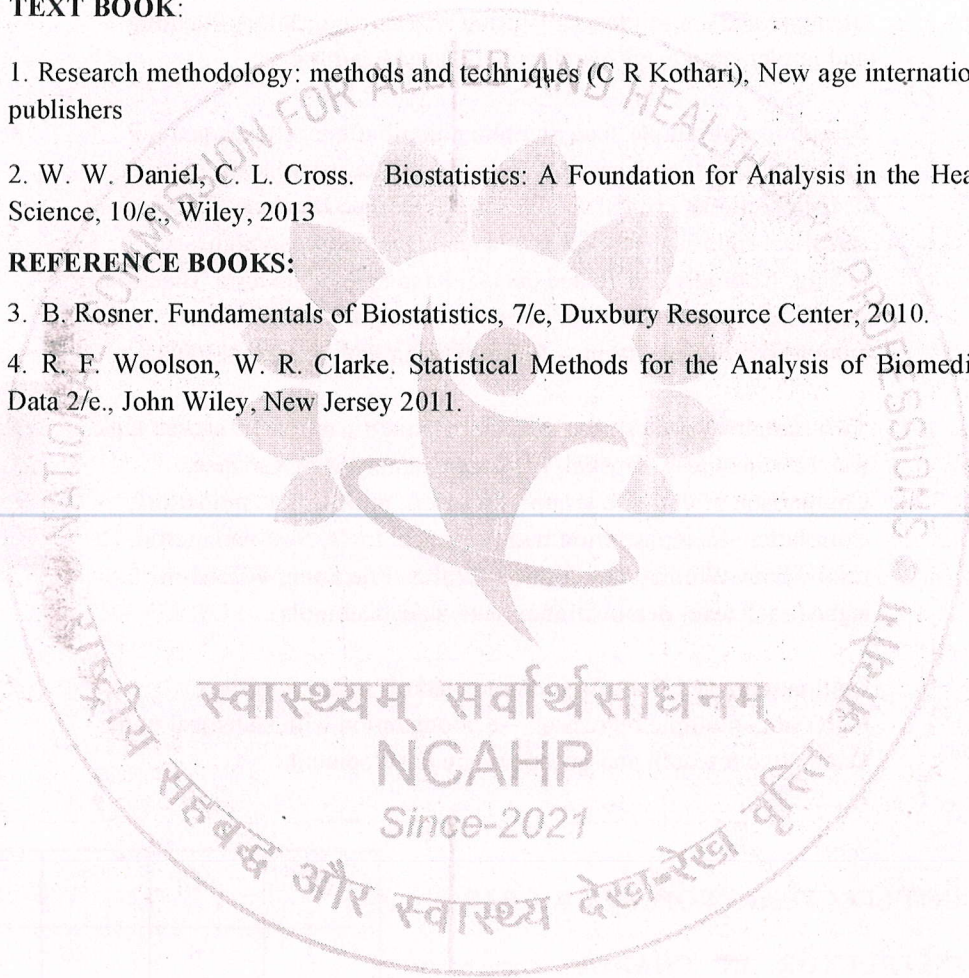
1. Apply the basic concepts in research
2. Choose appropriate study designs based on the research question
3. Use statistical tools to test for normality, pair-wise, and multiple comparisons, correlations and non-parametric tests
4. Apply and demonstrate Regression analysis
5. Utilise the concepts on qualitative research and analyse questionnaire development

TEXT BOOK:

1. Research methodology: methods and techniques (C R Kothari), New age international publishers
2. W. W. Daniel, C. L. Cross. Biostatistics: A Foundation for Analysis in the Health Science, 10/e., Wiley, 2013

REFERENCE BOOKS:

3. B. Rosner. Fundamentals of Biostatistics, 7/e, Duxbury Resource Center, 2010.
4. R. F. Woolson, W. R. Clarke. Statistical Methods for the Analysis of Biomedical Data 2/e., John Wiley, New Jersey 2011.



PREREQUISITES: Basic Biostatistics and Epidemiology.

COURSE PLAN

Unit	Topics	Hours
1	Introduction to research methods, research strategies, Clinical study designs, sampling methods and sample size, tests for significance, association and causation. Ethics in research, Critical review of literature and consolidation, Writing a research question, Planning and implementing a research project, Data handling	7
2	Sampling and sample size, Sampling distributions: t, chi-square, F distributions; Hypothesis testing: null and alternative hypotheses, decision criteria, critical values, type I and type II errors, Meaning of statistical significance; Power of a test; One sample hypothesis testing: Normally distributed data: z, t and chi-square tests; Binomial proportion testing. Tests for normality, comparison of 2 means, comparison of proportions - demonstration with statistical tools.	8
3	Two sample hypothesis testing; Nonparametric methods: signed rank test, rank sum test; Kruskal-Wallis test; Analysis of variance. Comparison of multiple groups. ANOVA, multivariate modelling. Correlation - demonstration with statistical tools, Non-parametric tests, Mann-Whitney test, Kruskal Wallis, Friedman, Wilcoxon signed rank test - demonstration with statistical tools	8
4	Confounding and Bias, Regression – simple linear, logistic regression, multiple regression – demonstration with statistical tools. Qualitative research and questionnaire development.	7

INTELLECTUAL PROPERTY RIGHTS

INSTRUCTOR IN CHARGE: Lawyer or Higher optometry holder with experience in medical law and practice

CL	CP	L	P
2	0	30	0

COURSE DESCRIPTION: The course is designed to introduce fundamental aspects of Intellectual Property Rights to learners who are going to play a major role in development and management of innovative projects. The course is designed for increasing awareness among a multidisciplinary audience.

OBJECTIVES: At the end of the semester, the student should be able to:

1. Analyse various aspects of copyrights and geographical indications
2. Analyse various aspects of patents and Infer aspects of industrial designs
3. Examine various aspects of trademark, and apply the knowledge about the enforcement of intellectual property rights

TEXT BOOK AND REFERENCE BOOKS:

1. T. M. Murray, M. J. Mehlman. Encyclopedia of Ethical, Legal and Policy Issues in Biotechnology, Vol 2, John Wiley & Sons, 2010.
2. P. N. Cheremisinoff, R. P. Ouellette, R. M. Bartholomew, Biotechnology Applications and Research, Technomic Publishing Co., Inc. 1985.
3. D. Balasubramaniam, C. F. A. Bryce, K. Dharmalingam, J. Green, K. Jayaraman, Concepts in Biotechnology, 3/e University Press. 2004.
4. B. David, T. R. Jewell, R. G. Buiser, Biotechnology: Demystifying the Concepts 1/e., Wesley Longman, USA, 2000.
5. Parulekar, S. D'Souza, Indian Patents Law – Legal & Business Implications, Macmillan India Ltd. 2006.
6. L. Wadehra. Law Relating to Patents, Trademarks, Copyright, Designs & Geographical Indications, Universal law Publishing Pvt. Ltd., 2000.
7. P. Narayanan, Law of Copyright and Industrial Designs, 4/e., Eastern law House, Delhi. 2010.

PREREQUISITES: Medical law and Ethics.

COURSE PLAN

Unit	Topics	Hours
1	COPYRIGHT: What is copyright? What is covered by copyright? How long does copyright last? Why protect copyright? RELATED RIGHTS: What are related rights?, Distinction between related rights and copyright?, Rights covered by copyright? GEOGRAPHICAL INDICATIONS: What is a geographical indication? How is a geographical indication protected? Why protect geographical indications?	10
2	PATENTS: Patent and kind of inventions protected by a patent, Patent document, How to protect your inventions? Granting of patent, Rights of a patent, How extensive is patent protection?, Drafting and Filing of a patent. INDUSTRIAL DESIGNS: What is an industrial design? How can industrial designs be protected? What kind of protection is provided by industrial designs? How long does the protection last? Why protect industrial designs?	10
3	TRADEMARKS: What is a trademark? Rights of trademark?, What kind of signs can be used as trademarks?, How is a trademark protected?, How is a trademark registered?, How long is a registered trademark protected for? Trade secrets and know-how agreements. ENFORCEMENT OF INTELLECTUAL PROPERTY RIGHTS: Infringement of intellectual property rights, Enforcement Measures	10

RESEARCH PROJECT - I

INSTRUCTOR IN CHARGE: M Optom with experience in handling Research Projects

CL	CP	L	P
3	0	45	0

COURSE DESCRIPTION:

This course aims to enable the learner to appreciate the theoretical concepts learnt on the basics of research and apply it to initiate a research and propose an action plan. It would also prepare the learner to seek permissions from the relevant research bodies.

During the course the learner is expected to decide on a research topic after discussion with the respective guides, perform a thorough literature review, attend periodic journal clubs, interact with peers, faculty and guide, prepare a review of literature through presentation, formulate the methodology after discussion with the guide and plan and present for approval from the Institutional Review Board and ethics Committee.

OBJECTIVE:

Upon completion of this course, the learner will be able to:

1. Critically review and summarize literature
2. Propose a work plan
3. Arrange for obtaining approvals from the IRB and Ethics committee

DIGITAL PEDAGOGY AND LEARNING MANAGEMENT

CL	CP	L	P
1	0.5	15	15

INSTRUCTOR IN CHARGE: Academician or Higher optometry holder with adequate experience in teaching students

COURSE DESCRIPTION: This course aims to train the learner to understand the means of ICT integration into teaching and learning and demonstrate the different forms of digital information in the appropriate context.

OBJECTIVES: At the end of the semester, the student should be able to:

1. Demonstrate and understand the various learning techniques
2. Compare various teaching methods, Review teaching methods and feedback techniques.
3. Appreciate the potentials of instructional multimedia

TEXT BOOK:

1. J. A. Dent, R. M. Harden, A Practical Guide for Medical Teachers, 3/e., Churchill Livingstone, 2009.
2. T. M. Srinivasan, Use of Computers and Multimedia in Education. Horton, 2002.
3. M. D. Williams, Integrating Technology into Teaching and Learning: Concepts and Applications, Prentice Hall, 2000.
4. S. K. Mangal, Advanced educational psychology PHI Learning private Ltd., 2006

COURSE PLAN:

Unit	Topic	Hours
1	Curriculum: Types of curricula- subject centered, learner centered curriculum, problem-based curriculum, competency/ outcome based curriculum and its importance Learning and changing behaviour: Learning: nature, characteristics of learning -Theories of learning: classical and operant conditioning. System's Approach, Principles of adult learning, Learning process Learning taxonomy- Bloom's taxonomy for cognitive domain, Krathwohl's affective domain taxonomy, Dave's Taxonomy for skill domain Learning objectives: Program objectives, course and unit objectives, framework the learning objectives, SMART objectives, horizontal and vertical integration of objectives.	4
2	Types of learners: Visual, auditory, Readers and kinaesthetic learners. Designing of teaching learning activities- Use the system's approach for instructional design, Learner centric system, developing a lesson plan and material for using active learning methods for a course. Teaching learning methods such as: a. Didactic lectures, b. Small group teaching methods, c. Large group teaching methods, d. Case based and problem based learning, e. Simulations, f. Team based learning, g. Flipped classroom, h. Use of technology/ multimedia in teaching, i. Bed side / chair side teaching, clinical rotations, j. Reflective practice, k. Inter-professional education, l. Skill development, m. Project based learning, n. Self-directed learning (SDL)	5

3	Assessment in higher education: Principles of assessment, planning for assessment, summative and formative assessments, performance indicators, various assessment tools such as: a. Long answer questions, b. Short answer questions, c. Multiple choice questions, d. Objective Structured Clinical Examination (OSCE), e. Objective Structured practical Examination (OSPE), f. Direct Observation of Procedural Skills (DOPS), g. Mini-Clinical Evaluation Exercise (Mini-CEX), h. Long Case Examination, i. Portfolios, j. Assignments- written/ oral, k. Self-assessment and peer assessment. Assessment reports and feedback: types of feedbacks, importance, reflective practice Evidence based teaching. ICT: Definition, Meaning, Scope, Trends and significance in the context of Education, ICT for Effective Teaching and Learning, ICT in classroom, ICT for Professional Development. Role of AIR in Education, Gyanvani, Countrywide Classroom, EDUSAT: Implications, ETV, Network. Evaluation of multimedia learning materials.	6
---	--	---

PRACTICALS:

1. Frame the learning objectives course/program
2. Design an instructional module for given learning objective
3. Deliver teaching session using active learning methods
4. Mentor the undergraduates to develop their knowledge and clinical skills
5. Design a feedback questionnaire, collect and analyse the feedback for teaching conducted in classroom/clinics

GENERAL CLINICS I

COURSE OBJECTIVE: This course aims to expose the learner to different specialty out-patient departments and general clinics to provide comprehensive optometric care.

CL	CP	L	P
0	4	0	120

CLINICAL POSTINGS:

1. General OPD/ Emergency
2. Glaucoma OPD
3. Neuro OPD
4. Pediatric OPD
5. Uvea OPD
6. Vitreoretina OPD
7. Cornea OPD
8. Community OPD

Each learner is expected to maintain clinic logbook, submit one case report per specialty as mentioned above and compulsorily attend all the weekly and special seminars.

LEARNING OUTCOMES: Upon completion of this course, the learners will be able to:

1. Appreciate the diversities pertaining to the ocular problems among patients presenting to the hospital
2. Handle the patients with their applied knowledge

SPECIALTY OPTOMETRY CLINICS - I

CL	CP	L	P
0	4	0	120

COURSE OBJECTIVE: This course aims to expose the learner to different optometry specialty clinics and diagnostic specialties to equip the learner correlate, assimilate the findings related to their research area of interest.

CLINICAL POSTINGS:

1. Binocular Vision / Vision therapy clinic
2. Low Vision Clinic
3. Contact lens Clinic
4. Refraction / Myopia control clinic
5. Occupational Optometry Clinic

DIAGNOSTIC POSTINGS:

1. Glaucoma Diagnostics (UBM, ASOCT, Visual Fields, OCT)
2. Retina Diagnostics (OCT, FFA, B Scan, Electro diagnostics)
3. Cornea Diagnostics (ASOCT, Pentacam, Topography, Abberometer)

Each learner is expected to maintain clinic logbook, submit one case report per specialty as mentioned above and compulsorily attend all the weekly and special seminars.

LEARNING OUTCOMES:

Upon completion of this course, the learners will be able to:

1. Gain exposure to different optometric specialty clinics and diagnostic specialties and able to interpret the test results
2. Utilize and translate the knowledge from these specialty clinics to their research avenues

COMMUNITY OUTREACH SERVICES-I

COURSE OBJECTIVE: This course aims to expose the learners to the outreach activities whereby the learner would appreciate the needs of the society, be responsive to the needs and make the learner socially accountable.

CL	CP	L	P
0	2	0	60

Learners will offer services in the community outreach initiatives of the academic/clinical institution for the specific hours in the semester. They will maintain a logbook of the services rendered and submit a case report of cases seen during the community activities in a specified format. The evaluation will be based on the number of hours of outreach services, logbook maintenance and case reports.

COMMUNITY OUTREACH POSTINGS:

1. School Eye Screening
2. Screening for Adults (Comprehensive adults eye screening camps, Cataract screening camps, Camps for elderly, Camps for differently abled, etc.)

Second Semester

**SPECIALIZED CLINICAL OPTOMETRY –
CONTACT LENS I**

CL	CP	L	P
2	0	30	0

INSTRUCTOR INCHARGE: A postgraduate or PhD in Contact lens with adequate clinical exposure in contact lens clinics.

COURSE DESCRIPTION: Upon completion of the course, the student should be able to understand the fitting for soft and RGP contact lenses along with the management of ocular complications.

OBJECTIVES: At the end of the course the students will be able to:

1. Ability to understand corneal physiology and oxygen needs
2. Ability to diagnose and manage complications due to contact lenses
3. Ability to fit specialized contact lenses like protective and therapeutic lenses

TEXT BOOK/REFERENCE BOOKS:

1. IACLE Modules
2. Anthony J. Phillips : Contact Lenses, 5th edition, Butterworth-Heinemann, 2006

PREREQUISITES: Ocular diseases, Basic Contact Lens

COURSE PLAN

Unit	Topics	Hours
1	Anatomy and Physiology of the Cornea and related Structures Tears and contact lenses	4
2	Optics and Lens Design Contact Lens Materials Clinical Instrumentation in contact lens practice	4
3	Soft contact lens fitting Toric Contact lens fitting	4
4	Rigid Gas Permeable corneal lens fitting Microbiology, Lens Care and Maintenance	4
5	Contact lens standards Lens checking : Soft and Rigid	4
6	Contact lens complications	4
7	Special types of Contact lenses – diagnosis, surgery, protective, therapeutic, sports, partially sighted	6

**SPECIALIZED CLINICAL OPTOMETRY –
LOW VISION**

INSTRUCTOR INCHARGE: A postgraduate or PhD in Low vision/Rehabilitation with adequate clinical exposure in handling low vision clinic.

COURSE DESCRIPTION: This course gives both in-depth theoretical knowledge in Low vision care. Upon completion of the course, the student should have thorough understanding of the causes of the low vision, its functional and psychosocial consequences, and rehabilitation measures through didactic lectures.

CL	CP	L	P
2	0	30	0

OBJECTIVES At the end of the course, students should be able to:

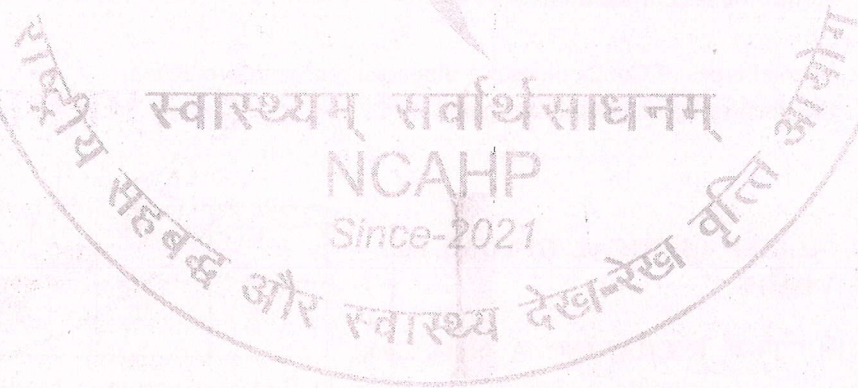
1. To understand the cause and needs of low vision patient
2. To suggest and guide patients with appropriate low vision devices (Optical/Non-optical)
3. To understand basic rehabilitation and refer in case of further need

TEXT BOOK:

1. B. Silverstone, Lighthouse Handbook on Vision Impairment and Vision Rehabilitation – Volume I and II. Oxford University press, 2000..

REFERENCE BOOKS:

1. Christine Dickinson: Low Vision: Principles and Practice Low vision care, 4th edition, Butterworth-Heinemann, 1998
2. Sarika G, Sailaja MVS, E Vaithilingam: Practice of Low vision –A guide book, Medical Research Foundation, 2015.
3. Richard L. Brilliant: Essentials of Low Vision Practice, Butterworth-Heinemann, 1999
4. Helen Farral: optometric Management of Visual Handicap, Blackwell Scientific publications, 1991
5. A J Jackson, J S Wolffsohn: Low Vision Manual, Butterworth Heinemann, 2007



[Handwritten signature]

[Handwritten signature]

[Handwritten signature]

PREREQUISITES: Ocular Diseases, Basic Low vision care

COURSE PLAN

Unit	Topics	Hours
1	Visual Disorders – Medical Perspective 1. The Epidemiology of Vision Impairment 2. Vision Impairment in the pediatric population 3. Ocular Diseases : Age – Related Cataract, Glaucoma, ARMD, Diabetic retinopathy, Corneal Disorders, Ocular Trauma, Sensory Neuro-ophthalmology and Vision Impairment, Refractive Disorders	5
2	Visual Disorders – The Functional Perspective 1. Low Vision and Psychophysics 2. Visual Functioning in Pediatric Populations with Low Vision 3. Perceptual correlates of Optical Disorders 4. Functional aspects of Neural Visual Disorders of the eye and Brain 5. Visual Disorders and Performance of specific Tasks requiring vision	5
3	Optical and Non-Optical device Field expanding systems and Assistive technology, Hand held minus lenses/reverse telescopes - optical principles, Reflecting mirrors, Use of Fresnel prisms, Peli lens model, Eccentric viewing training and Head Scanning Training, Computer software for visually impaired, Mobile software for visually impaired, Machines modified for helping visually impaired, perform activities of daily living without help, Large print items, auditory cues, Contrast Enhancement and Environmental modification	5

4	Visual Disorders – The Psychosocial Perspective	5
	1. Developmental perspectives – Youth 2. Vision Impairment and Cognition 3. Spatial orientation and Mobility of people with vision impairments 4. Social skills Issues in vision impairment 5. Communication and language : Issues and concerns 6. Developmental perspectives on Aging and vision loss 7. Vision and cognitive Functioning in old age	
5	Interactions of Vision Impairment with other Disabilities and sensory Impairments.	5
	1. Children with Multiple Impairments 2. Dual Vision and Hearing Impairment 3. Diabetes Mellitus and Vision Impairment 4. Vision Problems associated with Multiple Sclerosis 5. Vision Impairment related to Acquired Brain Injury 6. Vision and Dementia 7. Low Vision and HIV infection	
6	The Environment and Vision Impairment: Towards Universal Design 1. Indian Disabilities act 2. Children's Environments 3. Environments of Older people 4. Outdoor environments 5. Lighting to enhance visual capabilities 6. Signage and way finding 7. Accessible Environments through Technology Vision Enhancement Techniques: Optical and non-optical Vision Enhancement techniques	5

ELECTIVE 1

COURSE DESCRIPTION: Students should choose any one of the following elective courses or a course relevant to their area of interest.

CL	CP	L	P
2	0	30	0

1. Recent theories in development and management of refractive errors.
2. Community Optometry
3. Geriatric eye care
4. Innovation and Technology
5. Eye care for Special population
6. Courses relevant to optometry as decided by the respective institute.

Course plan: Faculty/ Institute can decide the course plan keeping in mind the need for meeting the required credit hours in 15 weeks.

RESEARCH PROJECT - II

INSTRUCTOR IN CHARGE: M Optom with experience in handling

CL	CP	L	P
4	0	60	0

COURSE DESCRIPTION: This course aims to enable the learner to appreciate the approaches to data collection and complete data collection based on the approved methodology.

During the course the learner will utilize various concepts pertaining to data collection, decide on sample size and formulate a plan for completing collection of data. Learners would also apply the statistical tools to analyse the data and submit a report.

OBJECTIVE:

Upon completion of this course, the learners will be able to complete data collection, analyse critically and submit a report.

GENERAL CLINICS II

COURSE OBJECTIVE: This course aims to expose the learner to different specialty out-patient departments and general clinics to provide comprehensive optometric care.

CL	CP	L	P
0	6	0	180

CLINICAL POSTINGS:

1. General OPD/ Emergency
2. Glaucoma OPD
3. Neuro OPD
4. Pediatric OPD
5. Uvea OPD
6. Vitreoretina OPD
7. Cornea OPD
8. Community OPD

Each learner is expected to maintain clinic logbook, submit one case report per specialty as mentioned above and compulsorily attend all the weekly and special seminars.

LEARNING OUTCOMES:

1. Upon completion of this course, the learners will be able to:
2. Appreciate the diversities pertaining to the ocular problems among patients presenting to the hospital
3. Handle the patients with their applied knowledge

SPECIALTY OPTOMETRY CLINICS - II

COURSE OBJECTIVE: This course aims is to expose the learner to different optometry

specialty clinics and diagnostic specialties to equip the learner correlate, assimilate the findings related to their research area of interest.

CL	CP	L	P
0	4	0	120

CLINICAL POSTINGS:

1. Binocular Vision / Vision therapy clinic
2. Low Vision Clinic
3. Contact lens Clinic
4. Refraction / Myopia control clinic
5. Occupational Optometry Clinic

DIAGNOSTIC POSTINGS:

1. Glaucoma Diagnostics (UBM, ASOCT, Visual Fields, OCT)
2. Retina Diagnostics (OCT, FFA, B Scan, Electro diagnostics)
3. Cornea Diagnostics (ASOCT, Pentacam, Topography, Abberometer)

Each learner is expected to maintain clinic logbook, submit one case report per specialty as mentioned above and compulsorily attend all the weekly and special seminars.

LEARNING OUTCOMES:

Upon completion of this course, the learners will be able to:

1. Gain exposure to different optometric specialty clinics and diagnostic specialties and able to interpret the test results
2. Utilize and translate the knowledge from these specialty clinics to their research avenues

COMMUNITY OUTREACH SERVICES-II

COURSE OBJECTIVE: This course aims to expose the learners to the outreach activities whereby the learner would appreciate the needs of the society, be responsive to the needs and make the learner socially accountable.

CL	CP	L	P
0	2	0	60

Learners will offer services in the community outreach initiatives of the academic/clinical institution for a specific hour in the semester. They will maintain a logbook of the services rendered and submit a case report of cases seen during the community activities in a specified format. The evaluation will be based on the number of hours of outreach services, logbook maintenance and case reports.

COMMUNITY OUTREACH POSTINGS:

- 1) School Eye Screening
- 2) Screening for Adults (Comprehensive adults eye screening camps, Cataract screening camps, Camps for elderly, Camps for differently abled, etc.)

Third Semester

**SPECIALIZED CLINICAL OPTOMETRY-
CONTACT LENS 2**

CL	CP	L	P
3	1	45	30

INSTRUCTOR INCHARGE: A postgraduate or PhD in Contact lens with adequate clinical exposure in contact lens clinics.

COURSE DESCRIPTION: Upon completion of the course, the student should be able to understand the contact lens fitting for compromised corneas and keratoconus. The student should also be able to understand the fitting philosophy of orthokeratology and myopia control.

OBJECTIVES: At the end of the course, the student will be able to:

1. Fit contacts lenses with all specialized contact lenses
2. Fit prosthetic contact lenses
3. Fit contact lens for paediatric group
4. Fit occupational contact lenses
5. Troubleshoot contact lenses related queries
6. Outline the available products available in the market and the sources
7. Understand the legalities to dispense contact lenses

TEXT BOOK:

1. IACLE Modules
2. Anthony J. Phillips : Contact Lenses, 5th edition, Butterworth-Heinemann, 2006

PREREQUISITES: Specialized Clinical Optometry- Contact Lens I

COURSE PLAN:

Unit	Topics	Hours
1	Introduction to advanced contact lens Microbiology and immunology in relation to contact lens wear. Pharmacology of contact lens solution; review of contact lens solution contents. Contact lens complications; causes and management and pathophysiology. Identification of lens deposits. Trouble shooting in CL related problems	2
2	Ability to fit specialized contact lenses: Keratoconus, Rose-K lenses, Mini scleral lenses, Hybrid lenses, Orthokeratology, Scleral lenses: Dry eyes, SJS, Post PK, Post C3R, Post LASIK ectasia	12
3	Contact lens prescription in different scenarios: Bifocal and Multifocal contact lenses, Ability to fit custom made ocular prosthesis, Cosmetic and prosthetic contact lens fitting, Ability to fit paediatric contact lenses, Ability to fit contact lens post PK and refractive surgery	8
4	Ability in fitting contact lenses in different occupations and Practice Management Fitting considerations for sports and special situations. Contact lens in different occupation. Advancements in contact lens industry, contact lens instrumentation and techniques, Products oriented design and material characteristics, setting up your practice - Law and Practice Management.	8

**SPECIALIZED CLINICAL OPTOMETRY-
BINOCULAR VISION**

CL	CP	L	P
2	0	30	0

INSTRUCTOR IN CHARGE: A post-graduate
or an optometrist with adequate clinical exposure in handling binocular vision clinic.

COURSE DESCRIPTION: This course is designed to provide the learners an exposure to advanced issues in managing binocular vision anomalies using vision therapy. The learners will be introduced to diagnosis and treatment of sensory-motor disorders of binocular vision, including strabismus, amblyopia, and general binocular dysfunction. special conditions like Accommodative Spasm/ Pseudomyopia, learning related vision problems, sensory-motor issues related to acquired brain injury, their optometric evaluation and Optometrist's role in these issues.

OBJECTIVES: Upon completion of this course, students will be able to

1. Define the concept related to basics of binocular vision, and interactions between accommodation and Vergence through clinical testing
2. Relate the development of the eye and visual system, and its implications to binocular vision anomalies; Perform a comprehensive Binocular vision assessment and arrive at appropriate diagnosis
3. Define and analyze various types of strabismus, clinical characteristics, effects of visual deprivation, amblyopia, oculomotor control and disruptions, nystagmus and perform appropriate clinical testing for the same
4. Explain the relationship between vision and learning and relate it to visual perceptual assessment, and acquired brain injury
5. Formulate a hierarchical vision therapy protocol for non-strabismic binocular vision dysfunctions and amblyopia

TEXT BOOK:

1. M. Scheiman, B. Wick, Optometric Management of Learning Related Vision Problems, 2/e., Mosby Inc, 2006.
2. L. J. Press, Applied Concepts in Vision Therapy, St. Louis: Mosby. 2008.
3. M. Scheiman, B. Wick, Clinical Management of Binocular Vision – Heterophoric, Accommodative, and eye movement disorders, 4/e., Lippincott Williams & Wilkins 2014.
4. S. Cotter, Clinical Uses of Prism: A Spectrum of Applications, 1/e., Mosby. 1995.
5. E. Ong, K. J. Ciuffreda, Accommodation, Nearwork, and Myopia. Optometric Extension Program. 1997.
6. G. B. Erickson, Sports Vision: Vision Care for the Enhancement of Sports Performance Butterworth-Heinemann, 2007.

ONLINE RESOURCES

1. Clinical Practice Guidelines of AOA on Care of the patient with Accommodative and Vergence dysfunction (CPG – 18)

<https://www.aoa.org/documents/optometrists/QRG-18.pdf>

2. Care of the patient with amblyopia (CPG – 4)

<https://www.aoa.org/documents/optometrists/QRG-4.pdf>

3. Care of the patient with strabismus (CPG – 12)

<https://www.aoa.org/documents/optometrists/QRG-12.pdf>

4. Care of the patient with paediatric eye and vision examination (CPG 2)

<https://www.aoa.org/documents/optometrists/CPG-2.pdf>

JOURNALS

1. Optometry (Journal of the American Optometric Association)

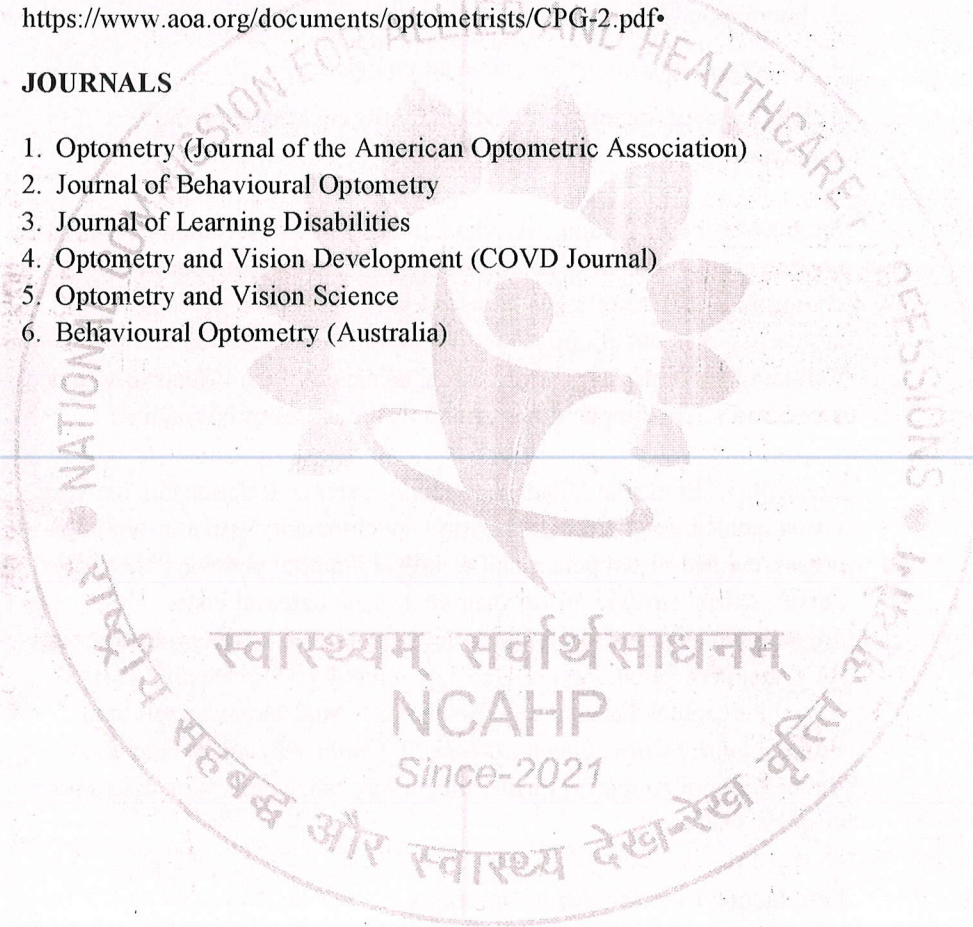
2. Journal of Behavioural Optometry

3. Journal of Learning Disabilities

4. Optometry and Vision Development (COVD Journal)

5. Optometry and Vision Science

6. Behavioural Optometry (Australia)



[Handwritten signature]

[Handwritten signature]

[Handwritten signature]

PREREQUISITES: Ocular Diseases, Basic Binocular Vision

COURSE PLAN:

Unit	Topics	Hours
1	Introduction 1. Basics concepts related to binocular vision – brief refreshment 2. Normal development of visual system 3. Interaction between accommodation and vergence 4. Understanding binocular vision anomalies 5. Clinical assessments involved in identifying binocular vision anomalies	8
2	Strabismus, Esodeviations, Exodeviations, Vertical deviations, types and clinical characteristics, accommodative and non-accommodative etiologies, oculomotor signs of disorders of the central nervous system, Assessment of optical and visual function in human infants. Refraction and refractive error in infants and children, Effects of visual deprivation. Amblyopia, types and clinical features of Nystagmus.	8
3	Concepts of Binocular Vision and neural systems: Relationship between vision and learning, visual processing development, Visual information processing and visual perceptual disorders. Parallel pathways for vision, dorsal, ventral streams, mirror neuron system, cerebral vision impairment, acquired brain injury, learning related vision problems, tests for visual perception, Test of Developmental Eye Movements, Test of Visual Perceptual Skills, Beery-Buktenica Visual Motor Integration, Wold Sentence Copy, Piaget Left-Right, Gardner Reversal Frequency, Birch-Belmont Auditory-Visual Integration, binocular vision assessment in sports vision	6
4	Introduction to vision therapy concepts 1. Vision therapy equipment 2. Formulating a Vision Therapy Protocol – Hierarchical sequencing 3. Vision therapy: In-office and Home 4. Accommodation, 5. Vergence	8

6. Oculomotor dysfunctions
7. Amblyopia
8. Recent advancements in vision therapy
9. Use of Optical aids in Vision Therapy
10. Lenses, prisms, and mirrors,
11. Free space and instrument training,
12. Paper and pencil techniques

SPECIALIZED CLINICAL OPTOMETRY- REHABILITATION

CL	CP	L	P
2	0	30	0

INSTRUCTOR IN CHARGE: A post-graduate or an optometrist with adequate clinical exposure in handling rehabilitation services.

COURSE DESCRIPTION: This course aims to provide the learners both in-depth theoretical knowledge and clinical exposure in rehabilitation. The course enables the learner to understand the nature of the rehabilitation, its functional and psychosocial consequences of rehabilitation measures.

OBJECTIVES: At the end of the course, the student should be able to:

1. Define different approaches to rehabilitation and can able to recite the available laws in relation to rehabilitation
2. Assess the psychology of the patients and understand the social and psychological limitations in relation with the rehabilitation approach
3. Outline various available rehabilitation methods and resources for children
4. Outline various available rehabilitation methods and resources for adults and elderly

TEXTBOOK AND REFERENCE BOOKS:

1. Silverstone, Lighthouse Handbook on Vision Impairment and Vision Rehabilitation – Volume I and II. Oxford University press, 2000.
2. Dickinson. Low Vision – Principles and Practice, Butterworth Heinemann, 2002.
3. M. V. S. Sailaja, G. Sarika, E. Vaithilingam, Practice of Low Vision Care Guide for Eye Care Professionals, 2/e., Sankara Nethralaya, 2015.
4. R. T. Jose, Understanding Low Vision, American Foundation for the Blind, 1994.
5. A. H. Lueck, Functional Vision: A Practitioner's Guide to Evaluation and Intervention, AFB Press, 2004

PREREQUISITES: Ocular diseases and Low vision care

COURSE PLAN:

Unit	Topics	Hours
1	Introduction and Legal aspects in Rehabilitation 1. Introduction to Rehabilitation: In western, in Asia and Personnel preparation for rehabilitations 2. Concept of Rehabilitation 3. Availability and Limitations in current medical treatments and the need for visual rehabilitation with respect to Indian Scenario, 4. Legal aspects of rehabilitation: Right to Persons with Disabilities act (2016), other related legal aspects and amendments towards betterment of visual challenged	5
2	Psychological and social factors in visual Adaptation and Rehabilitation 1. The Role of psychosocial Factors in adaptation to vision Impairment and rehabilitation outcomes for Children and Youth 2. The Role of psychosocial Factors in adaptation to vision Impairment and rehabilitation outcomes for Adults and Older adults 3. Social support and adjustment to vision Impairment across the life span 4. The person – Environment perspective of vision impairment 5. Associated Depression, Disability and rehabilitation 6. Methodological strategies and issues in social research on vision Impairment and rehabilitation	5
3	Rehabilitation for children Functional Vision evaluation of Infants, Educational assessment of visual function in Children, Classroom environment and academic activities, Support as an Optometrist, Early intervention in infants with low vision / Vision stimulation, Different types of schooling, Mainstreaming the child with visual impairment, Integrated/Inclusive modes of education, Holistic approach in visual Rehabilitation, Environmental modification at home and office, Performing basic activities of daily living, Available vocations / Vocational training / Independent living skills, Disability concessions for the visually impaired / Social security	10

Holistic approach in visual Rehabilitation, Environmental modification at home and office, Performing basic activities of daily living, Available vocations / Vocational training / Independent living skills, Disability concessions for the visually impaired / Social security, Job placement according to the educational qualification, Orientation and Mobility training, Independent living skills including cooking, cleaning, sweeping, ADL

Rehabilitation of older Adults with Vision Impairment:

Environmental modification at home, Performing basic activities of daily living, Disability concessions for the visually impaired, social and financial security

ELECTIVE II

COURSE DESCRIPTION: Students should choose any one of the following elective courses or a course relevant to their area of interest.

CL	CP	L	P
2	0	30	0

1. Advanced Ocular Disease (Retina, Glaucoma, Cornea)
2. Teaching Assistance-1
3. Occupational Optometry
4. Orientation and Mobility
5. Data science
6. Ophthalmic Genetics and Genetic Counselling
7. Course relevant to optometry as decided by the respective institute.

Course plan: Faculty/ Institute can decide the course plan keeping in mind the need for meeting the required credit hours in 15 weeks.

SCIENTIFIC COMMUNICATION

INSTRUCTOR IN CHARGE: A postgraduate or doctorate in the field of communication

CL	CP	L	P
2	0	30	0

COURSE DESCRIPTION: This course gives a comprehensive introduction to the learners that will help them create effective scientific communication along with preparation of technical documents.

OBJECTIVES: At the end of the course, the student should be able to:

1. Relate to the purpose and infer about an audience, and show ethical issues of technical communication. Outline key aspects, build on conducting interviews and surveys
2. Plan and compose a technical proposal, approach to review board and ethics committee
3. Identify important aspects of visual technical communication and utilize it
4. Determine significant aspects of oral technical communication and plan for giving effective oral presentations
5. Identifying and effectively choosing the mode of communication to communicating with peers

TEXTBOOK AND REFERENCE BOOK:

H. Graves, R. Graves, A Strategic Guide to Technical Communication, 2/e, Broad view press, 2012.

PREREQUISITES: Basic Communication skills

COURSE PLAN:

Unit	Topics	Hours
1	Audience, purpose and Genre – technical communication, linking purpose and audience, Ethical issues of technical communication – Ethical writing and its relation to technical communication, Interviewing and conducting surveys – Preparation and reporting the outcomes, Visual technical communication - Visuals for effective communication, guidelines for preparing and giving presentations	10
2	Proposal Writing: Research Proposals, Grant Proposals, Approvals from Review Boards and Ethics Committee, Dissertation writing and Manuscript writing: Consolidating the literature, addressing reviewer comments	10
3	Oral technical communication - Common speaking occasions, formal and informal presentations, guidelines for preparing and giving presentations, Communicating to peers: Defense/ VIVA voce, Letter to editors, view point articles, guest editorials, Media and social network - Communicating scientific content to the public	10

RESEARCH PROJECT - III

CL	CP	L	P
4	0	60	0

INSTRUCTOR IN CHARGE: M Optom with experience in handling

COURSE DESCRIPTION: This course aims to enable the learner to appreciate the theoretical concepts learnt on the basics of research and apply it to initiate a research and propose an action plan. It would also prepare the learner to seek permissions from the relevant research bodies.

During the course the learner is expected to collect data, clean, code and analyse data, write a dissertation report till results and discussion. Student should attend periodic journal clubs, interact with peers, faculty and guide and plan for publication of the work in discussion with the respective guides.

OBJECTIVE:

Upon completion of this course, the students will be able to:

1. Collect data and analyse
2. Present the results in relevant formats like tables and figures
3. Write the dissertation report
4. Plan for a manuscript writing

GENERAL CLINICS III

CL	CP	L	P
0	6	0	180

COURSE OBJECTIVE: This course aims to expose the learner to different specialty out-patient departments and general clinics to provide comprehensive optometric care.

CLINICAL POSTINGS:

1. General OPD/ Emergency
2. Glaucoma OPD
3. Neuro OPD
4. Pediatric OPD
5. Uvea OPD
6. Vitreoretina OPD
7. Cornea OPD
8. Community OPD

Each learner is expected to maintain clinic logbook, submit one case report per specialty as mentioned above and compulsorily attend all the weekly and special seminars.

LEARNING OUTCOMES:

Upon completion of this course, the learners will be able to:

1. Appreciate the diversities pertaining to the ocular problems among patients presenting to the hospital
2. Handle the patients with their applied knowledge

SPECIALTY OPTOMETRY CLINICS - III

COURSE OBJECTIVE: This course aims is to expose the learner to different optometry specialty clinics and diagnostic specialties to equip the learner correlate, assimilate the findings related to their research area of interest.

CL	CP	L	P
0	6	0	180

CLINICAL POSTINGS:

1. Binocular Vision / Vision therapy clinic
2. Low Vision Clinic
3. Contact lens Clinic
4. Refraction / Myopia control clinic
5. Occupational Optometry Clinic

DIAGNOSTIC POSTINGS:

1. Glaucoma Diagnostics (UBM, ASOCT, Visual Fields, OCT)
2. Retina Diagnostics (OCT, FFA, B Scan, Electro diagnostics)
3. Cornea Diagnostics (ASOCT, Pentacam, Topography, Abberometer)

Each learner is expected to maintain clinic logbook, submit one case report per specialty as mentioned above and compulsorily attend all the weekly and special seminars.

LEARNING OUTCOMES:

Upon completion of this course, the learners will be able to:

1. Gain exposure to different optometric specialty clinics and diagnostic specialties and able to interpret the test results
2. Utilize and translate the knowledge from these specialty clinics to their research avenues

COMMUNITY OUTREACH SERVICES-III

COURSE OBJECTIVE: This course aims to expose the learners to the outreach activities whereby the learner would appreciate the needs

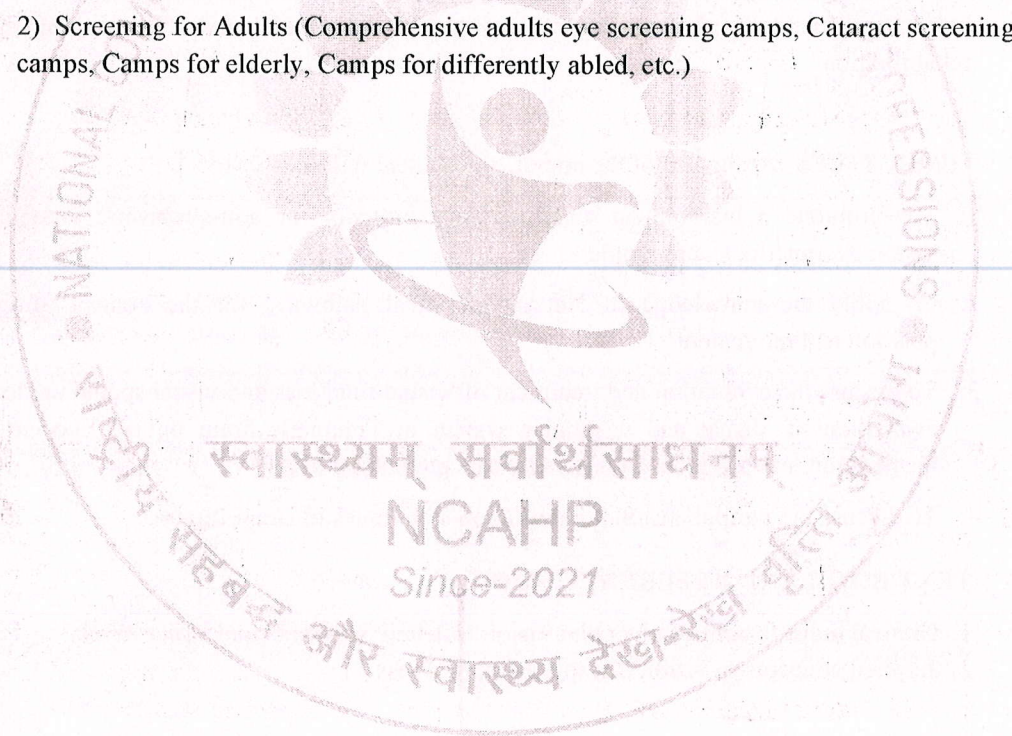
of the society, be responsive to the needs and make the learner socially accountable.

CL	CP	L	P
0	2	0	60

Learners will offer services in the community outreach initiatives of the academic/ clinical institution for a specific hour in the semester. They will maintain a logbook of the services rendered and submit a case report of cases seen during the community activities in a specified format. The evaluation will be based on the number of hours of outreach services, logbook maintenance and case reports.

COMMUNITY OUTREACH POSTINGS:

- 1) School Eye Screening
- 2) Screening for Adults (Comprehensive adults eye screening camps, Cataract screening camps, Camps for elderly, Camps for differently abled, etc.)



Fourth Semester

**SPECIALISED CLINICAL OPTOMETRY –
VISION THERAPY, NEURO-OPTOMETRY**

CL	CP	L	P
2	0	30	0

INSTRUCTOR IN CHARGE: A postgraduate or PhD in Optometry and vision science with relevant exposure to general and various specialty clinics particularly binocular vision, paediatric optometry and vision therapy.

COURSE DESCRIPTION This course is designed to provide the learners an exposure to advanced issues in binocular vision and its management. The learners will be introduced to diagnosis and treatment of sensory-motor disorders of binocular vision. The course will also provide advanced training to the learners in Neuro-Optometry and Neuro-Optometric vision therapy, evaluating patients with Traumatic brain injury and Cerebrovascular Accidents such as Stroke, and cranial nerve paresis. The course will help to understand the specialized evaluation protocols and Neuro-optometric rehabilitation.

OBJECTIVES: At the end of the course, the student will be able to:

1. To formulate a hierarchical vision therapy protocol for non-strabismic binocular vision dysfunctions, amblyopia
2. To apply the knowledge of Neuro-anatomical pathways for the control of eye position and movement
3. To discuss the evaluation and treatment of Visual field loss and visual spatial neglect, evaluation of Visual and vestibular system in Traumatic brain injury, Egocentric localization, management for altered visual adaptation in ABI
4. To discuss the various vision rehabilitation techniques in Brain Injury.

TEXT BOOK AND REFERENCE BOOK:

1. Clinical management of binocular vision Mitchell Scheiman and Bruce Wick
2. Applied concepts in vision therapy: Leonard Press

PREREQUISITES: Ocular Diseases, Paediatric Optometry, Binocular Vision, Low Vision

COURSE PLAN:

Unit	Topics	Hours
1	Vision therapy equipment, formulating a Vision Therapy Protocol – Hierarchical sequencing, vision therapy for accommodation, vergence and oculomotor dysfunctions, lenses, prisms, and mirrors, free space and instrument training, paper and pencil techniques, vision therapy for amblyopia, recent advancements in Vision Therapy	15
2	Anatomy of the visual cortex, pathway for vision, pupils, and eye movements, Structure and function of the early visual pathway including retinal ganglion cells, optic nerves, lateral geniculate nucleus and visual cortex. Taking history and understanding neuro-ophthalmic emergencies, visual loss of uncertain origin, Neuro-optometric assessment	6
3	Neuro-anatomical pathways for the control of eye position and movement; gaze holding, image stabilization and tracking eye movement systems; oculomotor signs of disorders of the central nervous system (palsies, nystagmus, ophthalmoplegia, cog-wheel pursuits, saccadic dysmetria); the near visual-motor response and the synergistic coupling of accommodation and convergence; binocular misalignment (heterophoria and fixation disparity, Visual and vestibular system in Traumatic brain injury (TBI), diplopia assessment, Hess, Diplopia charting, assessment of reading, Readalyzer, Vision rehabilitation in brain injury, training in compensatory scanning, Prisms and its applications, Interdisciplinary management and rehabilitation	9

ELECTIVE III

CL	CP	L	P
2	0	30	0

COURSE DESCRIPTION: Students should choose any one of the following elective courses or any course relevant to their area of interest.

1. Innovations in Ocular diagnostics
2. Teaching Assistance-2
3. Sports Optometry
4. Quality of life assessment and patient reported outcomes.
5. Non-optical refractive management
6. Health economics

Course plan: Faculty/ Institute can decide the course plan keeping in mind the need for meeting the required credit hours in 15 weeks.

RESEARCH PROJECT - IV

CL	CP	L	P
6	0	90	0

INSTRUCTOR IN CHARGE: M Optom with experience in handling

COURSE DESCRIPTION: This course enables the learner to critically review, propose, plan, implement and judge an appropriate research idea into reality, discuss on the results and conclude decisions based on the work. During the course, the learner will complete data collection, analyse the data and conclude, understand the scope and limitations of the work and present a complete report. Learner will also have periodic discussions with the guide and incorporate the discussion agenda into the research work.

OBJECTIVE:

Upon completion of this course, the learner will be able to:

1. To use appropriate strategy to clean and code the collected data
2. To use suitable statistical methods to present results
3. To complete research from the initial steps of problem identification to the final outcome
4. To submit a dissertation on their relevant research interest area
5. To defend the work to vision scientists, clinicians and public
6. To submit a manuscript in indexed journal.

GENERAL CLINICS IV

COURSE OBJECTIVE: This course aims to expose the learner to different specialty out-patient departments and general clinics to provide comprehensive optometric care.

CL	CP	L	P
0	8	0	240

CLINICAL POSTINGS:

1. General OPD/ Emergency
2. Glaucoma OPD
3. Neuro OPD
4. Pediatric OPD
5. Uvea OPD
6. Vitreoretina OPD
7. Cornea OPD
8. Community OPD

Each learner is expected to maintain clinic logbook, submit one case report per specialty as mentioned above and compulsorily attend all the weekly and special seminars.

LEARNING OUTCOMES:

Upon completion of this course, the learners will be able to:

1. Appreciate the diversities pertaining to the ocular problems among patients presenting to the hospital
2. Handle the patients with their applied knowledge.

SPECIALTY OPTOMETRY CLINICS - IV

COURSE OBJECTIVE: This course aims is to expose the learner to different optometry specialty clinics and diagnostic specialties to equip the learner correlate, assimilate the findings related to their research area of interest.

CL	CP	L	P
0	8	0	240

CLINICAL POSTINGS:

1. Binocular Vision / Vision therapy clinic
2. Low Vision Clinic
3. Contact lens Clinic
4. Refraction / Myopia control clinic
5. Occupational Optometry Clinic

DIAGNOSTIC POSTINGS:

1. Glaucoma Diagnostics (UBM, ASOCT, Visual Fields, OCT)
2. Retina Diagnostics (OCT, FFA, B Scan, Electro diagnostics)
3. Cornea Diagnostics (ASOCT, Pentacam, Topography, Abberometer)

Each learner is expected to maintain clinic logbook, submit one case report per specialty as mentioned above and compulsorily attend all the weekly and special seminars.

LEARNING OUTCOMES:

Upon completion of this course, the learners will be able to:

1. Gain exposure to different optometric specialty clinics and diagnostic specialties and able to interpret the test results
2. Utilize and translate the knowledge from these specialty clinics to their research avenues

COMMUNITY OUTREACH SERVICES-IV

COURSE OBJECTIVE: This course aims to expose the learners to the outreach activities whereby the learner would appreciate the needs of the society, be responsive to the needs and make the learner socially accountable.

CL	CP	L	P
0	2	0	60

Learners will offer services in the community outreach initiatives of the academic/ clinical institution for the specific hours in the semester. They will maintain a logbook of the services rendered and submit a case report of cases seen during the community activities in a specified format. The evaluation will be based on the number of hours of outreach services, logbook maintenance and case reports.

COMMUNITY OUTREACH POSTINGS:

- 1) School Eye Screening
- 2) Screening for Adults (Comprehensive adults eye screening camps, Cataract screening camps, Camps for elderly, Camps for differently abled, etc.)

Target cases for Semester -II

Speciality Clinics	No. of cases
Contact lens	
Rigid Contact lens fitting in simple refractive errors	5
Soft contact lens fitting in Simple Refractive errors	5
Bifocal fitting	3
Abnormal cornea	3
Cosmetic contact lens	5
Bandage lens fitting	2
prosthetic shell (Custom made)	2
Low Vision	
Low vision clinic	12
Low vision screening camp	1 camp
Integrated/Inclusive/Special school posting for a week period.	10
Case report – submission and presentations	
BV I	
Pediatric patient evaluation	12
Diagnosis and management of oculomotor problems	10
Amblyopia management	5
Management of special population	10
Community Optometry clinics	
Community eye care Hospitals/vision centers	10
Planning and conducting of Vision and Eye Screening	1 camp
Screening report writing	
Advanced Ocular Diagnostics	
Anterior segment Photography	10
Posterior segment Photography	10

PC Log book:

The students are required to carry out the following cases on the patients, rather than merely observing them, and document their experiences in the log book. The specific number of cases to be recorded in the log book for each semester is provided below.

Target cases for Semester -III

Speciality Clinics	No. of cases
Contact Lens Clinics	
Scleral contact lens fitting	6
Orthokeratology	2
Post-refractive surgery	2
Post-keratoplasty fitting	4
Abnormal cornea	2
Cosmetic contact lens	Already done in previous sem. But while submitting at university students need to submit previous year cases
Bandage lens fitting	
Rigid Contact lens fitting in Simple refractive errors	
Soft contact lens fitting in Simple Refractive errors	
Bifocal fitting	
Community Optometry Clinics	
Community eye care Hospitals	10
Planning and conducting of Vision and Eye Screening	Planning of one Eye camp by each student.
Screening report writing.	Concerned student who has arranged the camp needs to submit the report
Low Vision Clinics	
Low vision clinic	12
Case report – submitting and presentations	

Paediatric Clinics	
Paediatric patient evaluation	Refractive error subjects: 5 patients Anterior segment cases: 2 patients Posterior segment cases: 2 patients Lids and Adnexa (No. simple ptosis or NLD blocks): 2 patients
Diagnosis and management of oculomotor problems	Horizontal squints: 5 patients Vertical /oblique squints: 3 patients Sensory anomalies: 3 patients
Vision therapy	10
Amblyopia management	3
Management of special population	Already done in previous sem. But while submitting at university students need to submit previous year cases
Perceptual therapies	2
Neuro optometric rehabilitation	1
Advanced Ocular Diagnostics	
a. Topography/Pentacam/Orbscan	10
b. Specular microscopy	10
c. Pachymetry	10
d. Abberometry	10
e. AS OCT	10
f. UBM	10
g. Corneal Hysteresis	10
h. Pre- refractive procedures Work up.	10

Target cases for Semester -IV

Speciality Clinics	No. of cases
Contact Lens Clinics	
Scleral contact lens fitting	3 eyes
Orthokeratology	2 eyes
Post-refractive surgery	2 eyes
Post-keratoplasty fitting	2 eyes
Community Optometry Clinics	
Community eye care Hospitals	10
Low Vision Clinics	
Low vision clinic	10
Case report – submitting and presentations	
Paediatric Clinics	
Diagnosis and management of oculomotor problems	Horizontal squints: 5 Vertical /oblique squints: 3 Sensory anomalies: 3
Vision therapy	10
Management of special population	
Perceptual therapies	2
Neuro optometric rehabilitation	1
Advanced Ocular Diagnostics	
Glaucoma Work-ups : VFA, OCT, Pachymetry, AT	10 each
Dry eye Work ups: TBUT, OSDI, Meibography, Schirmer test	10 each
Electro diagnostics	3 cases each: 10 cases over all ERG, EOG, VEP, PVEP, MFERG etc.

Credits and Assessment Outline

First Semester

Course code	Course Titles	Credits/Week			Hours/Semester			Assessments		Total
		L	P	C	L	T/P	Total	IA *	UE **	(IA+UE)
MOP101	Applied ocular biology	3		3	45		45	30	70	100
MOP102	Advanced Ocular Diagnostics & Management	3		3	45		45	30	70	100
MOP103	Research Methodology and Biostatistics	2		2	30		30	30	70	100
MOP104	Intellectual property rights [#]	2		2	30		30	100	-	100
MOP105	Research Project-1 [#]	3		3	45		45	50	-	50
MOP106	Digital pedagogy and learning management [#]	1	0.5	1.5	15	15	30	100	-	100
MOP107	General Clinics-1		4	4		120	120	30	70	100
MOP108	Specialty Optometry Clinics-1		4	4		120	120	30	70	100
MOP109	Community Outreach-1		2	2		60	60	30	70	100
Total		14	10.5	24.5	210	315	525	430	420	850

#Non-University Exams

Second Semester

Course code	Course Titles	Credits/Week			Hours/Semester			Assessments		Total
		L	P	C	L	T/P	Total	IA*	UE**	(IA+UE)
MOP201	Specialized clinical optometry-CL-1	2		2	30		30	30	70	100
MOP202	Specialized clinical optometry-LVC	2		2	30		30	30	70	100
MOP203	Elective 1 [#]	2		2	30		30	100	-	100
MOP204	Research Project-2 [#]	4		4	60		60	50	-	100
MOP205	General Clinics-2		6	6		180	180	30	70	100
MOP206	Specialty Optometry Clinics-2		4	4		120	120	30	70	100
MOP207	Community Outreach-2		2	2		60	60	30	70	100
Total		10	12	22	150	360	510	300	350	650

#Non-University Exams

Third Semester

Course code	Course Titles	Credits/Week			Hours/Semester			Assessments		Total (IA+UE)
		L	P	C	L	T/P	Total	IA *	UE **	
MOP301	Specialized clinical optometry- CL-2	2		2	30		30	30	70	100
MOP302	Specialized clinical optometry- BV	2		2	30		30	30	70	100
MOP303	Specialized clinical optometry- Rehabilitation	2		2	30		30	30	70	100
MOP304	Elective 2 #	2		2	30		30	100	-	100
MOP305	Scientific communication #	2		2	30		30	100	-	100
MOP306	Research Project-3	4		4	60		60	30	70	100
MOP307	General Clinics-3		6	6		180	180	30	70	100
MOP308	Specialty Optometry Clinics-3		6	6		180	180	30	70	100
MOP309	Community Outreach-3		2	2		60	60	30	70	100
Total		14	14	28	210	420	630	410	490	900

#Non-University Exams

NCAHP
Since-2021

Fourth Semester

Course code	Course Titles	Credits/Week			Hours/Semester			Assessments		Total
		L	P	C	L	T/P	Total	IA *	UE **	(IA+UE)
MOP401	Specialized clinical optometry- Vision Therapy, Neuro optometry	2		2	30		30	30	70	100
MOP402	Elective 3 #	2		2	30		30	100	-	100
MOP403	Research Project-4	6		6	90		90	30	70	100
MOP404	General Clinics-4		8	8		240	240	30	70	100
MOP405	Specialty Optometry Clinics-4		8	8		240	240	30	70	100
MOP406	Community Outreach-4		2	2		60	60	30	70	100
Total		10	18	28	150	540	690	250	350	600

#Non-University Exams

PS:

- Distribution of marks for Internal and External assessments will be based on the credit distribution of the theory and practical for the courses. For e.g. If a course has 3 credits for Lecture and 0.5 credits for Practicals, 25 marks for theory and 5 marks for practical will be considered for internal assessments out of the 30 marks. Similar ratios will be followed for External assessments.
- For Practical examinations, an internal and external examiner will assess the candidates. All examinations will align with the IMLOCS document
- Research Project: An internal and external examiner will assess the candidates for the final evaluation. Optometrists with PhD (Preferably in the relevant disciplines of optometry) should be the examiner for assessment of research projects

1. PATIENT HISTORY

- a. Communicates with the patient
 - i. Modes and methods of communication are employed which take into account the physical, emotional, intellectual and cultural background of the patient
 - ii. A structured, efficient, rational and comfortable exchange of information between the optometrist and the patient takes place
- b. Makes general observations of patient
- c. Obtains the case history
- d. Obtains and interprets patient information from other professionals

2. PATIENT EXAMINATION

- a. Formulates
 - i. An examination plan based on the patient history is designed to obtain the information necessary for diagnosis and management
 - ii. Tests and procedures appropriate to the patient's condition and abilities are selected.
- b. Implements examination plan
 - i. Tests and procedures which will efficiently provide the information required for diagnosis are performed
 - ii. The examination plan and procedures are progressively modified on the basis of findings
- c. Assesses the ocular adnexae and the eye
 - i. The structure and health of the ocular adnexae and their ability to function are assessed
 - ii. The structure and health of the anterior segment and its ability to function are assessed
 - iii. The structure and health of the ocular media and their ability to function are assessed
 - iv. The structure and health of the posterior segment and its ability to function are assessed.
 - v. The nature of the disease state is determined
 - vi. Microbiological tests are selected and ordered
- d. Assesses central and peripheral sensory visual function and the integrity of the visual pathways
 - i. Vision and visual acuity are measured
 - ii. Visual fields are measured
 - iii. Colour vision is assessed
 - iv. Pupil function is assessed

- e. Assesses refractive status
- f. Assesses oculomotor and binocular function
 - i. Eye alignment and the state of fixation are assessed
 - ii. The quality and range of the patient's eye movements are determined
 - iii. The status of sensory fusion is determined
 - iv. The adaptability of the vergence system is determined
 - v. Placement and adaptability of accommodation are assessed
- g. Assesses visual information processing
 - i. Visual perceptual abilities are assessed
 - ii. Visual-motor integration is assessed
- h. Assesses the significance of signs and symptoms found incidental to the ocular examination in relation to the patient's eye and/or general health
 - i. Pertinent non-ocular signs and symptoms found incidentally during the ocular examination are identified and considered
 - j. Ensures that significant non-ocular signs and symptoms are investigated

3. DIAGNOSIS

- a. Interprets and analyses findings to establish a diagnosis or diagnoses
- b. Accuracy and validity of test results and information from the case history and other sources are critically appraised
- c. Test results and other information are analysed, interpreted and integrated to establish the diagnosis or diagnoses

4. PATIENT MANAGEMENT

- a. Designs a management plan for each patient and implements the plan agreed to with the patient
- b. The diagnosis is presented and explained to the patient
- c. Consideration is given to the relative importance or urgency of the presenting problems and examination findings
- d. Management options to address the patient's needs are explained
- e. A course of management is chosen with the patient, following counselling and explanation of the likely course of the condition, case management and prognosis
- f. The informed consent of the patient is obtained for the initiation and continuation of treatment
- g. Patients requiring ongoing care and review are recalled as their clinical condition indicates, and management is modified as indicated

5. PRESCRIBES SPECTACLES

- a. The suitability of spectacles as a form of correction for the patient is assessed
- b. The patient's refraction, visual requirements and other findings are applied to determine the spectacle prescription

6. PRESCRIBES CONTACT LENSES

- a. The suitability of contact lenses as a form of correction for the patient is assessed
- b. The patient's refraction, visual requirements and other findings are applied to determine the contact lens prescription
- c. Therapeutic and cosmetic contact lenses are recommended and prescribed
- d. Contact lenses are correctly ordered and on receipt, parameters are verified before the lenses are supplied to the patient
- e. Contact lenses are checked on the eye for physical fitting and visual performance
- f. The patient is instructed in matters relating to ocular health and vision in contact lens wear, contact lens care and maintenance
- g. Contact lens performance, ocular health and patient adherence to wearing and maintenance regimen is monitored

7. PRESCRIBES LOW VISION DEVICES

- a. A range of low vision devices is demonstrated
- b. Low vision devices suited to the patient's visual requirements and functional needs are prescribed
- c. The patient is instructed in the use of the low vision device
- d. The success of the low vision device is evaluated and monitored and additional or alternative devices are prescribed
- e. The patient is informed of and, if necessary, referred to other rehabilitative services

8. PRESCRIBES PHARMACOLOGICAL TREATMENT REGIMENS

- a. Selects appropriate pharmacological agents for the treatment of the patient's condition
- b. Microbiological factors are considered in the choice of therapeutic agent(s)
- c. Pharmacological factors are considered in the choice of therapeutic agent(s)
- d. Systemic factors are considered in the choice of therapeutic agent(s)
- e. Ocular factors are considered in the choice of therapeutic agent(s)
- f. Available delivery systems are considered in the choice of therapeutic agent(s)

- g. Drug substitution factors are considered in the choice of therapeutic agent(s)
- h. Prescribes therapeutic drugs
- i. Monitors and modifies treatment regimen
- j. Instructs/counsels patient on the correct use of the prescribed drugs
- k. Patients are instructed about precautionary procedures and non-therapeutic management

9. DISPENSES OPTICAL PRESCRIPTIONS ACCURATELY

- a. The prescription is interpreted and responsibility for dispensing is accepted
- b. The patient is assisted in selecting an appliance
- c. Lenses are ordered and fitted to spectacle frames in accordance with accepted standards
- d. The appliance is verified against the prescription prior to delivery
- e. The appliance is adjusted and delivered and the patient is instructed in the proper use and maintenance of the appliance and of any adaptation effects which may be expected

10. MANAGES PATIENTS REQUIRING VISION THERAPY

- a. Treats patients diagnosed with accommodative, vergence, strabismic and amblyopic conditions
- b. The patient is instructed in the use and maintenance of vision training equipment
- c. Goals of the vision therapy program and criteria for discharge are set
- d. Progress of the vision therapy program is monitored

11. TREATS OCULAR DISEASE AND INJURY

- a. Non-pharmacological treatment or intervention procedures are performed
- b. Pharmacological and/or other regimens are instituted and therapeutic devices are introduced to treat eye conditions
- c. The patient is instructed in the use, administration, storage and disposal of pharmaceutical agents
- d. The effect of treatment is monitored and changes in management are recommended

12. REFERS THE PATIENT

- a. The need for referral to other professionals for assessment and/or treatment is recognised and discussed with the patient.
- b. A suitable professional is recommended to the patient
- c. Timely referral, with supporting documentation, is made to other professionals
- d. Patients can be jointly managed with other health care practitioners

13. CO-WORK WITH OPHTHALMOLOGIST IN THE PROVISION OF PRE AND POST OPERATIVE MANAGEMENT OF PATIENTS

- a. Provides pre-operative assessment and advice
- b. Provides post-surgical follow-up assessment and monitoring of signs according to the surgeon's requirements and the procedure undertaken
- c. Provides emergency management for observed post-surgical complication
- d. Arranges appropriate referral for further post-operative treatment or assessment of complications

14. PROVIDES ADVICE ON VISION IN THE WORKPLACE

- a. Visual screenings for occupational or other purposes are provided
- b. Advice is provided on eye protection, visual standards and visual ergonomics in the workplace
- c. Individuals are counselled on the suitability of their vision for certain occupations
- d. Certification of an individual's visual suitability for designated occupations or tasks is provided

15. RECORDING OF CLINICAL DATA

- a. Ensures that data is organised in a legible, secure, accessible, permanent and unambiguous manner
- b. All relevant information pertaining to the patient is recorded in a format which is understandable and useable by the optometrist and his/her colleagues
- c. Patient records are kept in a readily retrievable format and are physically secure
- d. Maintains confidentiality of patient records
- e. Understands the need to ensure that access to records is limited to authorised personnel
- f. Information from patient records and/or obtained from patients is released only with the consent of the patient