BACHELOR OF OPTOMETRY

BACHELOR'S DEGREE IN OPTOMETRY (2023-2024)
PROGRAMME STRUCTURE
CREDIT: 168
Clinical Posting = 6th Semester
Internship= 7th & 8th Semesters

1ST SEMESTER					
SL. NO.	**SUBJECT CODE**	**NAMES OF SUBJECTS**	**COURSE LEVEL**	**TOTAL NO OF CREDITS**	**L-T-P**
MAJOR					
1	OPT242M101/ OPT242M111	GENERAL ANATOMY + GENERAL ANATOMY LAB	100	**3**	**2-0-2**
2	OPT242M101/ OPT242M111	GENERAL PHYSIOLOGY + GENERAL PHYSIOLOGY LAB	100	**3**	**2-0-2**
MINOR					
3	OPT242N101	LIGHTNING AND THE EYE	100	**3**	**3-0-0**
INTERDISCIPLINARY					
4	IKS992K101	INTRODUCTION TO INDIAN KNOWLEDGE SYSTEM I	100	**3**	**3-0-0**
ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)					
5	CEN982A101 & BHS982A102	COMMUNICATIVE ENGLISH & BEHAVIOURAL SCIENCE I	100	**2**	**1-0-0 1-0-0**
SKILL ENHANCEMENT COURSE (SEC)					
6	OPT242S101	BIOCHEMISTRY	100	**3**	**3-0-0**
VALUE ADDED COURSE (VAC)					
7	VAC1	VAC 1	100	**3**	**3-0-0**
		TOTAL		20	
2ND SEMESTER					

SL. NO.	SUBJECT CODE	NAMES OF SUBJECTS	COURSE LEVEL	TOTAL NO OF CREDITS	L-T-P
MAJOR					
1	OPT242M201/ OPT242M211	OCULAR ANATOMY + OCULAR ANATOMY LAB	100	**3**	**2-0-2**
2	OPT242M202	OCULAR PHYSIOLOGY	100	**3**	**3-0-0**
MINOR					
3	OPT242N201	HUMAN VISUAL SYSTEM -I	100	**3**	**3-0-0**
INTERDISCIPLINARY					
4	IKS992K201	INTRODUCTION TO INDIAN KNOWLEDGE SYSTEM II	100	**3**	**3-0-0**
ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)					
5	CEN982A201 & BHS982A202	COMMUNICATIVE ENGLISH & BEHAVIOURAL SCIENCE II	100	**2**	**2-0-0**
SKILL ENHANCEMENT COURSE (SEC)					
6	OPT242S201/ OPT242S211	OPTOMETRIC OPTICS + OPTOMETRIC OPTICS LAB	100	**3**	**2-0-2**
VALUE ADDED COURSE(VAC)					
9	VAC2	VAC 2	100	**3**	**2-0-2**
		TOTAL		**20**	

3RD SEMESTER					
SL. NO.	**SUBJECT CODE**	**NAMES OF SUBJECTS**	**LEVEL OF COURSE**	**TOTAL NO OF CREDITS**	**L-T-P**
MAJOR					

1	OPT242M301 / OPT242M311	OPTOMETRIC INSTRUMENT I+ OPTOMETRIC INSTRUMENT I LAB	200	**4**	**3-0-2**
2	OPT242M302	VISUAL OPTICS	200	**4**	**4-0-0**
3	OPT242M303	CLINICAL OPTOMETRY	200	**4**	**4-0-0**
INTERDISCIPLINARY					
4	OPT242I301	EYE DISEASE AWARENESS	200	**3**	**3-0-0**
ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)					
5	CEN982A301 & BHS982A302	COMMUNICATIVE ENGLISH III & BEHAVIOURAL SCIENCE III	200	**2**	**1-0-0 1-0-0**
SKILL ENHANCEMENT COURSE (SEC)					
6	OPT242S301	MEDICAL PATHOLOGY & MICROBIOLOGY & PHARMACOLOGY	200	**3**	**3-0-0**
		TOTAL		**20**	

4TH SEMESTER					
SL. NO.	**SUBJECT CODE**	**NAMES OF SUBJECTS**	**LEVEL OF COURSE**	**TOTAL NO OF CREDITS**	**L-T-P**
MAJOR					
1	OPT242M401 / OPT242M411	OPTOMETRIC INSTRUMENT II	200	**4**	**4-0-0**

2	OPT242M402 / OPT242M412	DISPENSING OPTICS I + DISPENSING OPTICS I LAB	200	**4**	**3-0-2**
3	OPT242M403	OCULAR DISEASE I	200	**4**	**4-0-0**
3	OPT242M404	CLINICAL EVALUATION OF VISUAL SYSTEM	200	**3**	**3-0-0**
4	OPT242M05	OCCUPATIONAL OPTOMETRY	200	**3**	**3-0-0**
ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)					
5	CEN982A401 & BHS982A402	COMMUNICATIVE ENGLISH & BEHAVIOURAL SCIENCE IV	200	**2**	**1-0-0 1-0-0**
		TOTAL		**20**	

5TH SEMESTER					
SL.NO.	**SUBJECT CODE**	**NAMES OF SUBJECTS**	**LEVEL OF COURSE**	**TOTAL NO OF CREDITS**	**L-T-P**
MAJOR					
1	OPT242M501/ OPT242M511	CONTACT LENS 1 + CONTACT LENS 1 LAB	300	**4**	**3-0-2**
2	OPT242M502	BINOCULAR VISION & OCULAR MOTILITY	300	**4**	**4-0-0**
3	OPT242M503	OCULAR DISEASE II	300	**4**	**4-0-0**
3	OPT242M504	BASICS OF LOW VISION	300	**4**	**4-0-0**
5	OPT242M505	DISPENSING OPTICS II	300	**4**	**4-0-0**
		TOTAL		**20**	

6TH SEMESTER					
SL. NO.	**SUBJECT CODE**	**NAMES OF SUBJECTS**	**LEVEL OF COURSE**	**TOTAL NO OF CREDITS**	**L-T-P**
MAJOR					
1	OPT242M601/ OPT242M611	APPLIED OPTOMETRY & ORTHOPTICS + APPLIED OPTOMETRY & ORTHOPTICS LAB	300	**4**	**3-0-2**
2	OPT242M602/ OPT242M612	LOW VISION AIDS & VISUAL REHABILITATION + LOW VISION AIDS & VISUAL REHABILITATION LAB	300	**4**	**3-0-2**
3	OPT242M604	SYSTEMIC CONDITIONS & THE EYE	300	**4**	**4-0-0**
4	OPT242M603/ OPT242M613	CONTACT LENS II + CONTACT LENS II LAB	300	**4**	**3-0-2**
5	OPT242M615	CLINICAL POSTING	300	**4**	**0-0-8**
		TOTAL		**20**	

7TH SEMESTER					
SL. NO.	**SUBJECT CODE**	**NAMES OF SUBJECTS**	**LEVEL OF COURSE**	**TOTAL NO OF CREDITS**	**L-T-P**
MAJOR					
1	OPT242M721	PEDIATRIC CLINIC SPECIALITY	400	4	0-0-8
2	OPT242M722	GERIATRIC CLINIC SPECIALITY	400	4	0-0-8
3	OPT242M723	CONTACT LENS SPECIALITY	400	5	0-0-10
4	OPT242M724	BINOCULAR VISION SPECIALITY	400	4	0-0-8
5	OPT242M725	LOW VISION SPECIALITY	400	4	0-0-8
		TOTAL		**21**	

8TH SEMESTER	

SL.NO.	SUBJECT CODE	NAMES OF SUBJECTS	LEVEL OF COURSE	TOTAL NO OF CREDITS	L-T-P
MAJOR					
1	OPT242M821	CLINICAL EVALUATION	400	7	0-0-14
2	OPT242M822	COMPREHENSIVE CLINICAL OPTOMETRY	400	8	0-0-16
RESEARCH PROJECT					
3	OPT242M823		400	12	
		TOTAL		**27**	

SYLLABUS (3rd SEM)

PAPER /SUBJECT NAME: OPTOMETRIC INSTRUMENT I+ OPTOMETRIC INSTRUMENT I LAB
SUBJECT CODE: OPT242M301/OPT242M311

SCHEME OF EVALUATION: (TP)
Total Credits: 04 **L-T-P-C = 3-0-2-4**

Course Objective:
To enable students to understand, handle, and interpret findings from fundamental optometric instruments used in anterior segment examinationn and vision assessment.

Course outcome:

On successful completion of the course the students will be able to:		
CO	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Identify and understand the working principles of basic anterior segment instruments	**BT 2**
CO 2	Operate slit lamp, tonometers, keratometer, and associated tools effectively.	**BT 3**
CO 3	Demonstrate patient-handling, aseptic techniques, and proper documentation during instrument use.	**BT 3**
CO 4	Interpret basic findings using anterior segment instrumentation for clinical application.	**BT 4**

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	• Introduction to clinical instrumentation in optometry • Trial frame and trial lens set • Retinoscope (streak & spot): principle and use • Auto-refractometer: components and procedure • Near vision testing charts (Snellen, LogMAR, N notation) • PD ruler and vertex distance scale • Manual and digital lensometer: use and calibration • Illuminated near vision tools	16

2	• Slit lamp biomicroscope: types, illumination techniques • Observation of lids, conjunctiva, cornea, anterior chamber, iris, lens • Filters and magnification systems • Use of fluorescein and tear breakup time (TBUT) • Grading anterior segment findings (e.g., Van Herick's, corneal staining).	16
3	• Intraocular pressure (IOP): significance and techniques • Non-contact tonometry (NCT): principle and use • Goldmann applanation tonometer: parts and technique • Schiotz tonometer: method and limitations • Pachymeter: measurement of corneal thickness • Van Herick technique for anterior chamber depth • Gonioscopy (introductory): indirect method overview •	17
4	• Direct ophthalmoscope (introductory use for anterior segment) • Penlight and red glow test • Keratometer (Bausch & Lomb / Javal Schiotz): corneal curvature • Pupillometer and transilluminator • Shadow test for anterior chamber depth	17

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

PRACTICAL

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	□ Handling trial frame, retinoscope, PD ruler □ Calibrating and using a manual Lensometer.	7
2	□ Patient positioning, slit lamp setup	7

	□ Fluorescein instillation and anterior segment grading.	
3	□ NCT handling □ Goldmann applanation demo □ Performing Van Herick test	8
4	□ Keratometry and interpretation □ Pupillary reaction testing (direct, consensual)	8

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

TEXTBOOK:

1. David B. Elliott. *Clinical Procedures in Primary Eye Care*, 4th Edition, Elsevier, 2020. ISBN: 978-0702077166
2. R.L. Gupta. *Manual of Clinical Optometry*, 2nd Edition, CBS Publishers & Distributors, 2016. ISBN: 978-8123925839
3. A.K. Khurana. *Theory and Practice of Optics and Refraction*, 2nd Edition, Elsevier, 2008. ISBN: 978-8131216805

REFERENCE BOOKS

1. H. Stanley Thompson, William J. Cline, and Herbert L. Griffin. *Clinical Visual Optics*, 3rd Edition, Butterworth-Heinemann, 1997. ISBN: 978-0750622840
2. Stefan Bandlitz. *Slit Lamp: A Textbook on Practical Use and Applications*, 1st Edition, Springer, 2018. ISBN: 978-3662571926
3. Lee Ann Remington. *Clinical Anatomy and Physiology of the Visual System*, 3rd Edition, Elsevier, 2012. ISBN: 978-1437719260

SYLLABUS (3rd SEM)

PAPER /SUBJECT NAME: VISUAL OPTICS
SUBJECT CODE: OPT242M302

SCHEME OF EVALUATION: (T)

Total Credits: 04	**L-T-P-C =4 -0-0-4**

Course Objective:
The objective of the subject is to deal with the concept of the eye as an optical instrument and thereby cover different optical components of the eye, types of refractive errors, and clinical approaches in the diagnosis, and management of various types of refractive errors.

Course outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**identify** the fundamentals of optical components of the eye.	**BT 2**
CO 2	Explain the optical models of the eye and their components	**BT 2**
CO 3	Measure and interpret ocular optical parameters using basic instruments	**BT 3**
CO 4	Analyze accommodation mechanisms and manage presbyopia-related near vision issues	**BT 4**

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	• Review of geometrical optics related to the eye • Schematic and reduced eye models: features and properties • Cardinal points and application in ocular systems • Comparison of Gullstrand's exact and simplified eye	22
2	• Optical constants of the eye: refractive indices of ocular media • Measurement of optical constants • Purkinje images (Types and applications) • Corneal curvature and thickness: keratometry & pachymetry • Aqueous and vitreous indices • Aberrations of the ocular system (spherical, chromatic, etc.)	22

	• Diffraction, depth of focus, and resolving power	
3	• Emmetropia vs. Ametropia • Axial vs. refractive ametropia • Myopia: classification, optics, and correction • Hypermetropia: classification and optics • Astigmatism: types, optics, and correction • Ocular axes: optical, visual, fixation (angle alpha, gamma, kappa).	22
4	• Mechanisms and theories of accommodation • Scheiner disc experiment • Changes in lens and zonules during accommodation • Amplitude and depth of focus • Effect of luminance and pupil size on accommodation • Accommodation and age (presbyopia) • Measurement of near addition, unequal near adds • Effect of changing spectacle vertex distance on accommodation	22

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

TEXTBOOK:

1. David A. Goss. *Introduction to Visual Optics*, 1st Edition, Butterworth-Heinemann, 1995. ISBN: 978-0750694472
2. Michael A. Freeman. *Optics for Optometrists*, 1st Edition, Butterworth-Heinemann, 1980. ISBN: 978-0407001450

REFERENCE BOOKS

1. Bennett & Rabbetts. *Clinical Visual Optics*, 4th Edition, Butterworth-Heinemann, 2007. ISBN: 978-0750688969
2. A.K. Khurana. *Theory and Practice of Optics and Refraction*, 2nd Edition, Elsevier, 2008. ISBN: 978-8131216805
3. Rudolf E. Wolf. *An Introduction to the Optics of the Eye*, American Academy of Optometry, 1961. (classic reference)

SYLLABUS (3rd SEM)

PAPER /SUBJECT NAME: CLINICAL OPTOMETRY
SUBJECT CODE: OPT242M303

SCHEME OF EVALUATION: (T)
Total Credits: 04 **L-T-P-C = 4-0-0-4**

Course Objective:
To develop advanced clinical skills in examination, diagnosis, and management of visual and ocular conditions using standard optometric techniques and instrumentation in a clinical setting.

Course outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Perform complete vision assessment and refractive correction procedures accurately.	**BT 3**
CO 2	Conduct anterior and posterior segment evaluations using standard clinical techniques	**BT 4**
CO 3	Interpret clinical findings and correlate with patient complaints for preliminary diagnosis	**BT 4**
CO 4	Maintain accurate records, communicate effectively with patients, and make informed referrals	**BT 5**

MODULE	TOPICS & COURSE CONTENT	PERIODS

1	• Taking detailed case history: chief complaint, medical & ocular history • Visual acuity assessment: distance & near (Snellen, LogMAR, ETDRS) • Pinhole acuity, contrast sensitivity, color vision testing • Clinical recording formats and SOAP notes • Communication skills with patients.	22
2	□ Retinoscopy: static, dynamic, working distance, interpretation □ Trial frame refraction and lens refinement □ Fogging, Duochrome, Jackson Cross Cylinder □ Binocular balancing techniques □ Prescribing considerations (age, occupation, symptoms).	22
3	□ Slit lamp: parts, illumination techniques, magnification □ Examination of lids, conjunctiva, cornea, anterior chamber, iris, lens □ Fluorescein staining and tear film evaluation □ Van Herick technique for angle estimation □ TBUT and Schirmer's test.	22
4	□ Non-contact and applanation tonometry □ Direct and indirect ophthalmoscopy □ Pupillary reflex tests □ Visual field screening (confrontation, Amsler grid) □ Referral indications and case documentation □ Clinical judgment, ethics, and patient safety.	22

Credit Distribution

Lecture/ Tutorial	Practicum	Experiential Learning
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

TEXTBOOK:

1. Mark Rosenfield & Nicola Logan. *Optometry: Science, Techniques and Clinical Management*, 2nd Edition, Elsevier, 2009. ISBN: 978-0750687788
2. David B. Elliott. *Clinical Procedures in Primary Eye Care*, 4th Edition, Elsevier, 2020. ISBN: 978-0702077166

REFERENCE BOOKS

1. A.K. Khurana. *Comprehensive Ophthalmology*, 6th Edition, New Age International, 2015. ISBN: 978-8122439450
2. William J. Benjamin. *Borish's Clinical Refraction*, 2nd Edition, Elsevier, 2006. ISBN: 978-0750675754
3. R.L. Gupta. *Manual of Clinical Optometry*, CBS Publishers, 2016. ISBN: 978-8123925839

SYLLABUS (3rd SEM)

PAPER /SUBJECT NAME: **EYE DISEASE AWARENESS**
SUBJECT CODE: OPT242I301

SCHEME OF EVALUATION: (T)
Total Credits: 04 **L-T-P-C =4 -0-0-4**

Course Objective:
The objective of the course is to equip students with the knowledge to identify common eye diseases, understand their risk factors, and promote preventative care and awareness within communities.

Course outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**list** the key risk factors, symptoms, and treatment options associated with common eye diseases.	**BT 1**
CO 2	**explain** the importance of early detection and prevention strategies in reducing the progression of eye diseases	**BT 2**

CO 3	Interpret clinical findings and correlate with patient complaints for preliminary diagnosis	**BT 3**
CO 4	Maintain accurate records, communicate effectively with patients, and make informed referrals	**BT 5**

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	• **Overview of Ocular Anatomy**: • Basic structure of the eye • Functional overview: how vision occurs • **Key Structures and Functions**: • Cornea, iris, lens, retina, optic nerve • **Protective and Supportive Structures**: • Eyelids, eyelashes, lacrimal glands (tear production) • Extraocular muscles and their role in eye movement • **Blood Supply and Innervation**: • Vascular supply to the eye (e.g., ophthalmic artery) • Nerves involved in vision and eye movement	22
2	• **Introduction to Refractive Errors**: • Explanation of refraction and its role in focusing light on the retina • **Types of Refractive Errors**: • **Myopia** (nearsightedness): Causes, symptoms, correction • **Hyperopia** (farsightedness): Causes, symptoms, correction • **Astigmatism**: Distortion of vision due to irregular corneal shape • **Presbyopia**: Age-related difficulty focusing on close objects • **Diagnosis and Measurement**:	22

	• Methods such as visual acuity tests, retinoscopy, and autorefractors • **Treatment Options**: • Corrective lenses (glasses and contact lenses) • Refractive surgery (e.g., LASIK, PRK)	
3	• **Understanding Dry Eye Syndrome**: • Definition and prevalence, especially in aging populations • Importance of a healthy tear film • **Causes and Risk Factors**: • Environmental factors (e.g., screen time, air conditioning) • Systemic health conditions (e.g., autoimmune disorders) • Medications that affect tear production • **Symptoms and Diagnostic Techniques**: • Symptoms: irritation, burning, redness, fluctuating vision • Diagnostic tests: Schirmer test, tear breakup time (TBUT), ocular surface staining • **Management and Treatment**: • Artificial tears and lubricating ointments • Lifestyle modifications (e.g., increasing humidity, reducing screen time) • Prescription therapies: anti-inflammatory drops, tear-stimulating medications • Surgical options: punctal plugs for tear retention • **Introduction to Conjunctivitis:** • **Types of Conjunctivitis:** • •Viral: Often associated with respiratory infections, highly contagious • •Bacterial: Causes, symptoms, and transmission • •Allergic: Triggered by allergens (e.g., pollen, pet dander) • **Symptoms and Diagnosis**	22

	• **Treatment and Prevention:** • **Prevention: Hygiene practices (handwashing, avoiding touching eyes)**	
4	• **Common ocular conditions:** Cataracts, Corneal opacity, Pterygium, Pingeucula etc. • **Occupational optometry** • Evaluate vision demands and eye health in the workplace • Identify and mitigate eye hazards (e.g., glare, UV exposure) • Prescribe task-specific eyewear for various occupations • Promote ergonomic practices and eye safety • preventive measures to reduce eye strain and injuries	22

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

TEXTBOOK:

1. AK Khurana, Indu Khurana: Anatomy and Physiology of Eye, Second edition, CBS Publishers, New Delhi, 2006
2. Principles & Practice of Refraction, Duke Elder.

REFERENCE BOOKS

1. **Jack J. Kanski, Brad Bowling.** *Clinical Ophthalmology: A Systematic Approach*, 7th edition, Elsevier, 2011. ISBN: 978-0702040931
2. **World Health Organization (WHO).** *World Report on Vision*, 1st edition, WHO Press, 2019. ISBN: 978-9241516570

3. **Bruce Muchnick.** *Ocular Therapeutics Handbook: A Clinical Manual*, 1st edition, Lippincott Williams & Wilkins, 2008. ISBN: 978-0781768658

AECC/SUBJECT NAME: Communicative English and Behavioral Science-I

Course Level: 100

SUBJECT CODE: CEN982A301 & BHS982A302CEN982A301/BHS982A302

SCHEME OF EVALUATION: (T)

Total credits: 2 **L-T-P-C – 2-0-0-2**

Course Objective: The aim of the course is to develop essential business communication skills, including effective writing, speaking, and interpersonal communication, to enhance professional interactions, collaboration, and successful communication strategies within diverse corporate environments.

Course Outcomes: On successful completion of the course the students will be able to:

CO Level	Course Outcome	Blooms Taxonomy Level
CO 1	**Define and list** business documents using appropriate formats and styles, demonstrating proficiency in written communication for various business contexts.	BT 1
CO 2	**Demonstrate** confident verbal communication skills through persuasive presentations, active listening, and clear articulation to engage and influence diverse stakeholders.	BT 2
CO 3	**Apply** effective interpersonal communication strategies, including conflict resolution and active teamwork, to foster positive relationships and contribute to successful organizational communication dynamics	BT 3

Detailed Syllabus		
Units	**Course Contents**	**Periods**

I	**Business Communication: Spoken and Written** • The Role of Business Communication • Classification and Purpose of Business Communication • The Importance of Communication in Management • Communication Training for Managers • Communication Structures in Organizations • Information to be Communicated at the Workplace • Writing Business Letters, Notice, Agenda and Minutes	**5**

II	**Negotiation Skills in Business Communication**
	• The Nature and Need for Negotiation
	  o Situations requiring and not requiring negotiations
	• Factors Affecting Negotiation
	  o Location, Timing, Subjective Factors
	• Stages in the Negotiation Process
	  o Preparation, Negotiation, Implementation
	• Negotiation Strategies
		5

III	**Ethics in Business Communication** • Ethical Communication • Values, Ethics and Communication • Ethical Dilemmas Facing Managers • A Strategic Approach to Business Ethics • Ethical Communication on the Internet • Ethics in Advertising	**5**
IV	**Business Etiquettes and Professionalism** • Introduction to Business Etiquette • Interview Etiquette • Social Etiquette • Workplace Etiquette • Netiquette	**5**

Texts:

1. Business Communication by Shalini Verma
2. Business Communication by P.D. Chaturvedi and Mukesh Chaturvedi
3. Technical Communication by Meenakshi Raman and Sangeeta Sharma

BHS:

Course objectives: To increase one's ability to draw conclusions and develop inferences about attitudes and behaviour, when confronted with different situations that are common in

modern organizations .To enable the students to understand the process of problem solving and creative thinking.

Course outcomes: On completion of the course the students will be able to:
CO1: Understand the process of problem solving and creative thinking.
CO2: Develop and enhance of skills required for decision-making.

Modules	Course Contents	Periods
I	**Problem Solving Process** Defining problem, the process of problem solving, Barriers to problem solving(Perception, Expression, Emotions, Intellect ,surrounding environment)	4
II	**Thinking as a tool for Problem Solving** What is thinking: The Mind/Brain/Behaviour Critical Thinking and Learning: -Making Predictions and Reasoning. -Memory and Critical Thinking. - Emotions and Critical Thinking.	4
III	**Creative Thinking** - Definition and meaning of creativity, - The nature of creative thinking :Convergent and Divergent thinking, - Idea generation and evaluation (Brain Storming) - Image generation and evaluation. - The six-phase model of Creative Thinking: ICEDIP model	4
IV	**Building Emotional Competence** Emotional Intelligence – Meaning, components, Importance and Relevance Positive and Negative emotions Healthy and Unhealthy expression of emotions	4
Total		**16**

Text books:

1. J William Pfeiffer (ed.) Theories and Models in Applied Behavioural Science, Vol Management; Pfeiffer &Company
2. Blair J. Kolasa, Introduction to Behavioural Science for Business, John Wiley & Sons Inc.

SYLLABUS (3rd SEM)

PAPER /SUBJECT NAME: MEDICAL PATHOLOGY , MICROBIOLOGY & PHARMACOLOGY

SUBJECT CODE: OPT242S301

SCHEME OF EVALUATION: (T)

Total Credits: 04 **L-T-P-C =4-0-0-4**

Course Objective:

The objective of this subject is to deals with basic biological, biochemical and pathogenic characteristics of pathogenic organisms.

Course outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**understand** basic principles of diagnostic ocular Microbiology, the principles of sterilization and disinfection in hospital and ophthalmic practice;	**BT 2**
CO 2	**apply** knowledge of pathophysiological processes and relevant microorganisms to formulate differential diagnoses.	**BT 3**
CO 3	**analyze** the pathogenesis of the diseases caused by the organisms in the human body with particular reference to the eye infections and	**BT 4**
CO 4	analyze the pathological conditions.	**BT 4**

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	Bacteria: Cell structure, elementary idea about classification and morphological basis. Staining reactions: Gram staining, spore staining, acid fast staining. Bacterial growth: nutritional requirements, physical factor affecting, culture media, and growth curve. Elementary idea about bactericidal agents: Phenol, alcohol. Sterilization(principles, types & methods). Pasteurization. Antibiotics: Bacteriostatic and bactericidal effects. Virus: elementary knowledge of viral-morphology, viral genome and classification, viral replication. Herpes viruses, hepatitis viruses, miscellaneous viruses, human immunodeficiency viruses.	22

2	Microbial growth & death, Laboratory culture, host pathogen interactions, antimicrobial chemotherapy, pathogenic mechanisms common to external ocular infections process – clinical pathology. Physiology, pathology, treatment & epidemiology of infectious diseases caused by bacteria, virus, fungi & parasitic organisms with emphasis to disease with ocular manifestations & infectious eye diseases in hot climate as in India. AIDS & eye.	22
3	General Pathology Structure & function of immune system – Structure and function of thymus, spleen & red bone narrow- Immunity & its types , plasma proteins & immune reaction, cells involved in immune system. Humoral immunity theories of antibodies formation. Structure & function of lymph nodes. Structure & function of thymus, spleen & red bone narrow. Non specific immunity, Antibody mediated immunity, specific immunity, cell modified immunity, Active immunity, Passive immunity. The acute inflammatory reaction – changes in acute inflammation, changes in the calibre of the blood vessels, changes in blood flow, changes associated with exudation. Local sequelae of acute inflammation. The chemical mediators of acute Inflammation & Repair: inflammation. Role of the mast cell in inflammation. Role of the platelets in inflammation. Chronic inflammation – cause, classification, general features. Source of infection. Transmission of organisms to the body. wound infections. Wound healing. Immuno-pathogenesis – type I, II, III & IV hypersensitivity. Mechanism of autoimmunity. Organ specific & non organ specific auto immune disease. The HLA system – histocompatibility complex. Pyogenic & bacterial infection.Gralt rejection-basic outline. Disorder of growth – metaplasia, dysplasia, neoplasia. Circulatory disturbances – thrombosis, infarction, ischemia, embolism. Degeneration (calcification).	22
4	1. General Pharmacology • Drug sources, classifications, and routes (focus on ocular). • Drug absorption, distribution, metabolism, excretion (ADME). • Drug-receptor interaction, mechanism of action, dose-response. • Adverse drug reactions (ocular/systemic), drug toxicity, treatment. 2. CNS & ANS Drugs (Relevant to Eye Care)	22

	• Autonomic drugs: Mydriatics, miotics, cycloplegics. • Local anesthetics in ocular procedures. • Analgesics, NSAIDs, and sedatives: Use in ocular pain. 3. Ocular Pharmacology • Ocular drug formulations, packaging, and penetration. • Diagnostic agents: Mydriatics, cycloplegics, anesthetics. • Therapeutic drugs: o Antibiotics, corticosteroids, antivirals. o Antiglaucoma medications. o Viscoelastic agents in surgery.	

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

BURTONG .R.W:Microbiology for the Health Sciences, third edition,J.P.LippincottCo., St. Louis, 1988.

2. MJPelczar (Jr),ECSChan, NRKrieg: Microbiology, fifth edition ,TATAMcGRAW-HILL Publisher, New Delhi,1993

3. K S Ratnagar: Pathology of the eye & orbit, Jaypee brothers Medical Publishers, 1997

Reference Books :

1. **Harsh Mohan.** *Textbook of Pathology*, 6th edition, Jaypee Brothers Medical Publishers, 2010. ISBN: 978-8184487053

2. **R. Ananthanarayan, C. K. Jayaram Paniker.** *Textbook of Microbiology*, 9th edition, Universities Press, 2013. ISBN: 978-8173718793

3. **K. D. Tripathi.** *Essentials of Medical Pharmacology*, 7th edition, Jaypee Brothers Medical Publishers, 2013. ISBN: 978-9350259375.

SYLLABUS (4TH SEM)

PAPER /SUBJECT NAME: OPTOMETRIC INSTRUMENT II

SUBJECT CODE: OPT242M401

SCHEME OF EVALUATION: (T)

Total Credits: 04 **L-T-P-C =4-0-0-4**

Course Objective:

To equip students with the knowledge and clinical skills to operate and interpret findings from diagnostic instruments used in the assessment of the posterior segment and neurological aspects of vision.

Course outcome:

On successful completion of the course the students will be able to:

CO Levels	Course Outcome	Blooms Taxonomy Level
CO 1	Identify and explain the principle and applications of key posterior segment diagnostic instruments	**BT 2**
CO 2	Perform diagnostic procedures like fundus photography, OCT, and perimetry accurately.	**BT 3**
CO 3	Analyze and interpret findings from perimetry, OCT, and electrophysiology for clinical decision-making	**BT 4**
CO 4	Demonstrate clinical responsibility in documentation, referral, and ethical handling of advanced tests.	**BT 5**

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	• Direct ophthalmoscope: principle, use, limitations • Indirect ophthalmoscope: binocular view, advantages • Fundus camera: mydriatic and non-mydriatic systems • Digital fundus photography: image capture and interpretation • Fluorescein angiography: principles and clinical uses • Autofluorescence imaging.	22
2	• OCT: principle, types (Time-domain, Spectral-domain, Swept-source) • Retinal layer interpretation (RNFL, macula, optic disc) • Anterior segment OCT overview • OCT Angiography (OCTA) – basics and uses • Interpretation of OCT reports: glaucoma, macular degeneration, edema.	22

3	• Visual pathway and its clinical relevance • Manual perimetry (Goldmann) – principle and plotting • Automated static perimetry (Humphrey): threshold strategies, indices • Visual field defects: types and clinical correlations • Interpretation of VF printouts (MD, PSD, GHT, reliability indices)	22
4	• Electroretinogram (ERG): types and indications • Visual Evoked Potential (VEP): waveform interpretation • Electrooculogram (EOG): application in retinal dystrophies • B-scan ultrasonography: principle and indications • A-scan (overview for IOL power calculation) • Color vision testing (Ishihara, HRR, Farnsworth D15)	22

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

TEXTBOOK:

1. David B. Elliott. *Clinical Procedures in Primary Eye Care*, 4th Edition, Elsevier, 2020. ISBN: 978-0702077166
2. P. K. Mukherjee. *Clinical Optometry*, Jaypee Brothers Medical Publishers, 2016. ISBN: 978-9352501803

REFERENCE BOOKS :

 A.K. Khurana. *Comprehensive Ophthalmology*, 6th Edition, New Age International, 2015. ISBN: 978-8122439450

 Gunter K. von Noorden. *Binocular Vision and Ocular Motility*, 6th Edition, Mosby, 2002. ISBN: 978-0323016340

 Scott W. Cousins (Ed.). *Retina and Vitreous*, American Academy of Ophthalmology, 2021 (Basic and Clinical Science Course)

SYLLABUS (4TH SEM)

PAPER /SUBJECT NAME: DISPENSING OPTICS I + DISPENSING OPTICS I LAB

SUBJECT CODE: OPT242M402/OPT242M412

SCHEME OF EVALUATION: (T)

Total Credits: 04 **L-T-P-C =3-0-2-4**

Course Objective:

To provide foundational knowledge in spectacle dispensing, including types of lenses and frames, basics of facial measurements, lens prescription interpretation, and fitting techniques necessary for entry-level optical practice.

Course outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Identify and describe types of ophthalmic lenses, coatings, and frame materials	**BT 2**
CO 2	Take accurate measurements and understand spectacle prescriptions	**BT 3**
CO 3	Demonstrate entry-level skills in dispensing optics including alignment, adjustment, and patient communication.	**BT 3**
CO 4	Assist in frame selection and fitting according to facial measurements and visual needs	**BT 4**

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	□ Classification of ophthalmic lenses: spherical, cylindrical, toric • Lens types: single vision, bifocals, trifocals, progressive lenses (overview) • Lens materials: glass, CR-39, polycarbonate, Trivex, high-index plastics • Coatings: hard coat, anti-reflective, UV-protection, photochromic • Advantages and limitations of each material	16

2	□ Classification of spectacle frames: full-rim, semi-rimless, rimless □ Frame materials: metal (monel, titanium), plastic (acetate, nylon, TR90) □ Parts of a spectacle frame □ Frame measurements: eye size, bridge size, temple length □ Markings on frames and their interpretation.	16
3	□ Understanding spectacle prescriptions: SPH, CYL, AXIS, ADD, PRISM □ Transposing prescriptions □ Vertex distance and effective power calculation □ Base curves and their impact on vision □ Recording prescriptions accurately for lab orders.	17
4	□ Pupillary distance (PD): binocular and monocular □ Segment height and OC marking □ Frame fitting: alignment, adjustment, comfort check □ Lens centering and fitting into the frame □ Patient education and care instructions.	17

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

PRACTICALS:

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	• Identify single vision, bifocal, and progressive lenses	7

	• Distinguish between glass and plastic lenses.	
2	• Identify and classify various types of spectacle frames. • Use of frame ruler, digital caliper, and PD stick • Demonstrate proper nose pad and temple adjustments	7
3	• Calculate effective power using vertex distance • Use lensometer to verify SPH, CYL, axis, and ADD	8
4	• Measure monocular and binocular pupillary distance • Demonstrate lens insertion into plastic and metal frames	8

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

TEXTBOOK:

1. C.V. Brooks & I.M. Borish. *System for Ophthalmic Dispensing*, 3rd Edition, Elsevier, 2006. ISBN: 978-0750674801
2. David Wilson & John F. Borish. *Clinical Dispensing Optics*, Butterworth-Heinemann, 2007. ISBN: 978-0750688969

REFERENCE BOOKS :

 Clifford W. Brooks. *Essentials of Ophthalmic Lens Finishing*, 2nd Edition, Butterworth-Heinemann, 2003. ISBN: 978-0750674801

 Naomi R. Kelly. *Ophthalmic Dispensing*, 1st Edition, Butterworths, 1990. ISBN: 978-0407004208

 A.K. Khurana. *Theory and Practice of Optics and Refraction*, 2nd Edition, Elsevier, 2008. ISBN: 978-8131216805

SYLLABUS (4TH SEM)

MAJOR III/SUBJECT NAME: OCULAR DISEASE I (ANTERIOR SEGMENT DISEASE) **SUBJECT CODE: OPT242M403** **COURSE LEVEL: 200** **SCHEME OF EVALUATION: (T)** **L-T-P-C:4-0-0-4** **Total credits: 4**

Course Objective:

The objective of the course is to deal with various ocular diseases affecting various parts of the eyes. It covers clinical signs and symptoms, cause, pathophysiological mechanism, diagnostic approach, differential diagnosis and management aspects of the ocular diseases.

Course Outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**apply** knowledge of the different aspects of ocular diseases to interpret clinical signs and symptoms, suggesting potential diagnoses	**BT 3**
CO 2	**analyze** disease conditions and plan proper treatment/management for the patient.	**BT 4**
CO3	Analyze the pathophysiological mechanisms of retinal and neuro-ophthalmic diseases for accurate diagnosis.	**BT4**
CO4	Formulate management plans and referral decisions based on clinical findings and systemic associations.	**BT5**

SYLLABUS:

MODULE	TOPICS & COURSE CONTENT	PERIODS

1	Anterior segment ocular diseases involving orbit, eyelids, adnexa, conjunctiva, cornea, urea, sclera, anterior chamber, iris and lens. Symptomatology, clinical signs, diagnosis, pathogenesis, pathophysiology , systemic disease relationships and treatment of degenerative, infections and inflammatory conditions affecting these structures. Disease of the Lids – Congenital Deformities of the Lids .Oedema of the Lids. Inflammatory Conditions of the Lids. Deformities of the Lid Margins. Deranged Movement of the Eyelids. Neoplasm's of the Lids. Injuries of the Lids. Diseases of the Lachrymal Apparatus-. Dry Eye. Disease of the Lachrymal Gland. Disease of the Lachrymal Passages. Operations for Chronic Dacryocystitis.	**22**
2	Disease of the Conjunctiva- Subconjunctival Haemorrhage Infective Conjunctivitis. Follicular Conjunctivitis. Granulomatous Conjunctivitis. Allergic Conjunctivitis. Conjunctivitis Associated with Skin conditions. Degenerative conditions of the Conjunctiva. Vitamin- A Deficiency. Cysts and Tumours of the Conjunctiva. Conjunctival Pigmentation . Injuries of the Conjunctiva. Disease of the Cornea –Congenital Anomalies. Inflammation of the Cornea (Keratitis). Superficial Keratitis. Deep Keratitis. Vascularisation of Cornea. Opacities of the Cornea. Keratoplasty. Corneal Degenerations. Corneal Dystrophy's. Corneal Pigmentation. Corneal Injuries. Refractive Corneal Surgery. Corneal Ulcer (Bacterial , Viral , Fungal)	**22**
3	Disease of the Sclera- Episcleritis. Scleritis. Staphyloma of the Sclera. Blue Sclerotic Scleromalacia Performs. Nanophthalmos. Injuries of the Sclera. Disease of the Iris.-. Congenital Anomalies. Inflammations (Anterior Uveitis) . Specific Types of Iriodocyclitis . Degenerations of the Iris. Cysts and Tumours of the Iris. Injuries of the Iris. Disease of the Celery Body- Inflammations of the Celery Body. Purulent Iriodocyclitis (Panophthalmitis) . Evisceration . Sympathetic Opthalmia. Vogt-Koyanagi – Harada Syndrome. Tumours of the Celery body. Injuries of the Celery body.	**22**

4	Glaucoma- .Formation of Aqueous Humor. Drainage of Aqueous. Intraocular Pressure(IOP) . Ocular Rigidity. Tonography. .Developmental Glaucoma (Buphthalmos) . Primary Narrow Angle Glaucoma. Primary Open Angle Glaucoma. Normotensive Glaucoma . Ocular Hypertension . Secondary Glaucoma. Surgical Procedures for Glaucoma(Steps Only) ,YOGPI ,trabeculectomy.Laser Procedure in Glaucoma . Artificial Drainage Devices in Glaucoma Surgery(Molteno). Disease of the Lens- Congenital Malformations. Cataract . Congenital and Developmental Cataract . Senile Cataract. Traumatic Cataract. Complicated Cataract. Secondary Cataract. After Cataract. Dislocation of the Lens. SurgicalProcedures for Removal of the Lens(Operative Steps Only). Phacoemulsification(ICCE,ECCE,IOL) . Small Incision Cataract Surgery (Manual Phaco).Intraocular Lens Implantation-AC+PC, IOL.	**22**
	TOTAL	**88**

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
4*22 =88 NCH	0	4*8=32NCH (Assignments, Quizzes, Seminar, Case Study, Discussion)

TEXT BOOK:

1. A K Khurana: Comprehensive Ophthalmology, 4th edition, New age international (p) Ltd. Publishers, New Delhi, 2007

2. Stephen J. Miller : Parsons Diseases of the Eye, 18th edition, Churchill Livingstone, 1990

3. Jack J. Kanski Clinical Ophthalmology: A Systematic Approach, 6th edition, Butterworth-Heinemann, 2007

Reference Books –

1. **Bruce Muchnick.** *Ocular Therapeutics Handbook: A Clinical Manual*, 1st edition, Lippincott Williams & Wilkins, 2008. ISBN: 978-0781768658
2. **Mitchell Scheiman, Bruce Wick.** *Clinical Management of Binocular Vision: Heterophoric, Accommodative, and Eye Movement Disorders*, 4th edition, Wolters Kluwer, 2014. ISBN: 978-1451175257
3. **Jack Kanski, Brad Bowling.** *Clinical Ophthalmology: A Systematic Approach*, 7th edition, Elsevier, 2011. ISBN: 978-0702040931
4. **Myron Yanoff, Joseph W. Sassani.** *Ocular Pathology*, 7th edition, Elsevier, 2014. ISBN: 978-1455738564

SYLLABUS (4TH SEM)

PAPER /SUBJECT NAME: CLINICAL EVALUATION OF VISUAL SYSTEM

SUBJECT CODE: OPT242M404

SCHEME OF EVALUATION: (T)

Total Credits: 04 **L-T-P-C =4-0-0-4**

Course Objective:

To equip students with knowledge and skills to perform a comprehensive visual system assessment, interpret clinical signs, and understand the physiological and functional integrity of vision, including the sensory, motor, and neurological pathways.

Course outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Understand and explain the principles and steps involved in evaluating the visual system	**BT 2**
CO 2	Identify, describe and record sensory and motor anomalies through standard tests	**BT 3**
CO 3	Interpret findings from functional and neurological visual evaluations.	**BT 4**
CO 4	Integrate test results to suggest preliminary diagnoses and refer appropriately	**BT 5**

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	□ Case history taking: significance, key components □ Visual acuity assessment: distance & near, methods (Snellen, LogMAR, E-chart, etc.) □ Pinhole test and its interpretation □ Refraction status: emmetropia, ametropia overview □ Role of illumination and contrast in testing □ Recording and interpreting findings	22

2	□ Color vision tests: types (Ishihara, HRR, Farnsworth D-15), interpretation, defects □ Contrast sensitivity: Pelli-Robson chart, sine wave gratings □ Visual fields: confrontation test overview □ Glare testing and disability glare □ Stereopsis and depth perception tests □ Visual performance under different lighting conditions..	22
3	□ Extraocular muscle function: versions, ductions, saccades, pursuits □ Cover test (distance and near), alternate cover test □ Hirschberg and Krimsky tests □ Near point of convergence (NPC) □ Prism bar evaluation: base in/base out □ Maddox rod, Maddox wing, and synoptophore tests.	22
4	□ □ Pupillary reactions: direct, consensual, swinging flashlight test □ RAPD and its clinical significance □ Evaluation of visual pathways □ Visual field testing overview (perimetry) □ Recording visual complaints and associating symptoms □ Differentiating ocular vs neuro-ophthalmic causes	22

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

TEXT BOOK:

1. *Clinical Procedures in Primary Eye Care* – David B. Elliott, 4th Edition, Elsevier, 2020. ISBN: 9780702077166
2. *Clinical Optometry* – P.K. Mukherjee, Jaypee Brothers Medical Publishers, 2016. ISBN: 9789352501803

Reference Books –

 System for Ophthalmic Dispensing – *C.V. Brooks & I.M. Borish, 3rd Edition, Elsevier, 2006. ISBN: 9780750674801*

 Visual Optics and Refraction: A Clinical Approach – *David A. Goss, Butterworth-Heinemann*

 Binocular Vision and Ocular Motility – *Gunter K. von Noorden, 6th Edition, Mosby*

SYLLABUS (4TH SEM)

MAJOR III/SUBJECT NAME: OCCUPATIONAL OPTOMETRY

SUBJECT CODE: OPT242M405

COURSE LEVEL: 200

SCHEME OF EVALUATION: (T) **L-T-P-C:4-0-0-4**

Total credits: 4

Course Objective:

To train students in evaluating and managing visual needs in different occupational settings. The course aims to build awareness about the interaction between vision and work performance, prevention of occupational visual hazards, and standards for visual ergonomics.

Course Outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Describe the scope and responsibilities of occupational optometry in various work environments	**BT 2**

CO 2	Analyze visual demands and recommend corrective or preventive measures for different occupations	**BT 4**
CO3	Evaluate vision-related risks in occupational settings and propose ergonomic solutions	**BT4**
CO4	Apply legal and international guidelines to assess occupational visual standards and fitness	**BT3**

SYLLABUS:

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	• Definition and scope of occupational optometry • Historical background and evolution of occupational eye care • Role of optometrists in occupational health teams • Visual demands in various occupations: office work, driving, industry, digital users, etc. • Principles of ergonomics: workplace design, lighting, posture	**22**
2	• Visual standards for driving (commercial & non-commercial), aviation, military, railways • Vision screening protocols for pre-employment & periodic check-ups • Job-specific vision testing: acuity, contrast, stereoacuity, glare, visual fields • Visual ergonomics in computer and digital device users • Personal Protective Eyewear (PPE) – classification and fitting	**22**

3	• Types of occupational eye injuries: mechanical, chemical, thermal, radiation • Common occupational eye diseases (welders' eye, radiation cataracts, etc.) • Preventive strategies: safety protocols, protective eyewear, awareness programs • Color vision standards and occupational limitations • Role of optometry in industrial health policies	**22**
4	• Workplace vision screening camps: setup and execution • Occupational Vision Standards: Indian & International (ISO, OSHA, ILO guidelines) • Role of WHO and other international bodies in occupational health • Legal frameworks in India related to vision and employment (Factories Act, etc.) • □ Case documentation and reporting for legal/occupational compliance	**22**
	TOTAL	**88**

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
4*22 =88 NCH	0	4*8=32NCH (Assignments, Quizzes, Seminar, Case Study, Discussion)

TEXT BOOK:

1. Sheedy JE. *Vision and the Visual Environment in Occupational Practice*, American Academy of Optometry
2. Pal B. *Textbook of Occupational Optometry*, 1st Edition, CBS Publishers

Reference Books –

- Kanski JJ. *Clinical Ophthalmology – A Systematic Approach*, 8th Edition, Elsevier
- WHO Manual on *Occupational Health and Safety*
- *Occupational Safety and Health Guidelines*, International Labour Organization (ILO)
- OSHA (Occupational Safety and Health Administration) Eye and Face Protection Guidelines

SYLLABUS (5TH SEM)

PAPER /SUBJECT NAME: CONTACT LENS + CONTACT LENS LAB
SUBJECT CODE: OPT242M501/OPT242M511
SCHEME OF EVALUATION: (TP)
Total Credits: 04 **L-T-P-C = 3-0-2-4**

Course Objective:
The objective of the subject is to study the concept of contact lens, its benefits, manufacturing and understand briefly about soft contact lens and RGP contact lens.

Course outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**To understand** the history, development, benefits and manufacturing of contact lens.	**BT 1**
CO 2	**To interpret** the optics, classification, vertex distance and FDA classification of contact lens and its materials.	**BT 2**
CO 3	**To determine** the indications and contraindications of contact lens and soft contact lens fitting and assessment.	**BT 3**
CO 4	**To explain** RGP contact lens fitting, assessment, care and maintenance.	**BT 4**

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	• Contact Lens: History & Development • Benefits of Contact Lenses Over Spectacles • Contact Lens Terminology • Classification of Contact Lenses & Materials (Soft & RGP) • Material Properties of Contact Lens Materials • FDA Classification of Contact Lens Materials • Manufacturing Methods	16

2	• Examination techniques and optical principles.
	  o Slit Lamp Examination Technique
	  o Corneal Topography
	  o Keratometry
	  o Extended Keratometry
	• Contact Lens Optics:
	  o Contact Lens vs Spectacle Lens
	  o Back Vertex Calculation
	  o Tear Lens System
		16

3	• Clinical preparation for lens fitting • Patient Selection & Pre-Screening • Indications & Contraindications for Contact Lens Use	17
4	• Practical skills for fitting and care Soft Spherical Contact Lens Fitting & Assessment Soft Contact Lens Care & Maintenance Spherical RGP Contact Lens Fitting & Assessment RGP Lens Care & Maintenance	17

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

PRACTICAL

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	Routine clinical procedure for contact lens patient & selection of contact lens.	7
2	Keratometry & slit lamp Biomicroscopy.	7
3	Spherical soft & Spherical RGP contact lens fitting: selection of contact lens Base curve, diameter & Power & fitting Assessment.	8
4	Insertion & Removal of soft & RGP contact lens. Contact lens & maintenance.	8

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

TEXTBOOK:

Agarwal S, 2005, Dr. Agarwals' Textbook on Contact Lenses, Jaypee Brothers Medical Publishers.
Sinha R, 2017, Textbook of Contact Lenses, Jaypee Brothers Medical Publishers.

Reference Books

1. **Nathan Efron.** *Contact Lens Practice*, 4th edition, Elsevier, 2013. ISBN: 978-0702042508
2. **Milton Hom, Adrian Bruce.** *Manual of Contact Lens Prescribing and Fitting*, 3rd edition, Butterworth-Heinemann, 1995. ISBN: 978-0750600405
3. **Edward S. Bennett, Craig W. Borovoy.** *Clinical Contact Lens Practice*, 2nd edition, Lippincott Williams & Wilkins, 2006. ISBN: 978-0781740589
4. **Ruth B. Peters.** *Contact Lens Complications*, 3rd edition, Butterworth-Heinemann, 2006. ISBN: 978-0750687751

SYLLABUS (5TH SEM)

PAPER/SUBJECT NAME: BINOCULAR VISION &OCULAR MOTALITY
SUBJECT CODE: OPT242M502
COURSE LEVEL: 300
SCHEME OF EVALUATION: (T) **L-T-P-C:4-0-0-4**
Total credits: 4

Course Objective:
The objective of this course is to understand the neurosensory and neuromotor mechanisms involved in binocular vision. It includes theoretical knowledge of binocular fusion, stereopsis, vergence and versions, ocular movements, and related binocular anomalies.

Course Outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Define and explain the principles and grades of binocular vision and basic ocular movements.	**BT 1**
CO 2	Illustrate and differentiate normal and abnormal binocular functions and types of ocular motility disorders.	**BT 2**
CO3	Apply concepts of binocular vision to interpret fusion anomalies, stereopsis issues, and eye movement dysfunctions.	**BT3**

CO4	Analyze clinical test findings to formulate diagnosis and management strategies for binocular vision and vergence anomalies.	**BT4**

SYLLABUS:

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	Grades of binocular vision – Simultaneous perception, fusion, stereopsis Advantages of binocular vision Visual direction and the horopter – Visual direction, corresponding point and normal retinal correspondence, horopter, physiologic diplopia Binocular fusion – Panum's area, fixation disparity Theories of binocular fusion – Synergy hypothesis of Panum Local sign hypothesis of Hering Eye movement hypothesis of Helmholtz Suppression hypothesis of Du Tour and Verhoeff Physiologic basis of fusion.	**22**
2	Dichoptic stimulation – Depth with fusion and diplopia, diplopia without depth, retinal rivalry and suppression, binocular luster. Stereopsis – Physiological basis, local and global stereopsis, fusion, stereopsis acuity, neurophysiology. Depth perception – Stereopsis Non-stereoscopic clues under binocular conditions Monocular clues (non-stereoscopic spatial orientation): parallactic movements, linear perspective, overlay of contours, size-distance from horizon, highlights/shadows, aerial perspective Influence of accommodation and convergence Integration of motor and sensory systems	**22**

3	Binocular optical defects – Anisometropia: vision and treatment Aniseikonia: symptoms, clinical investigation, treatment Binocular muscular coordination – Orthophoria Binocular muscular anomalies – Heterophoria: causes of imbalance (exophoria, esophoria, hyperphoria, cyclophoria), symptoms, treatment Heterotropia: vision in concomitant strabismus, treatment Convergence – Voluntary and reflex convergence Measurement Relation between accommodation and convergence Binocular accommodation Fatigue of convergence Convergence anomalies and reading difficulties – Insufficiency of convergence Convergence excess Reading ability of children.	**22**

4	Binocular vision tests – Simultaneous macular perception Fusion Stereopsis tests: Synoptophore/stereoscope, Vectograph, Titmus stereo test, Random-dot stereogram, Simple motor task Eye movements – Orbit anatomy of extraocular muscles Interactive dynamics and brainstem neurophysiology Functions and nerve supply of EOMs Mechanics of action – cross-sectional area, muscle length, arc of contact, muscle plane, axis of rotation Physiology – kinematics, position of gaze, Fick's axes Types of ocular movements – Monocular: adduction, abduction, supraduction, infraduction, incycloduction, excycloduction Binocular: Versions (saccades, pursuit, stabilization, maintenance), Vergences (convergence, divergence, vertical) Supranuclear control: superior colliculi, occipital cortex, psycho-optical reflexes, fixation Oculomotor system – Vestibulo-ocular reflex (VOR) Optokinetic reflex Diagnosis & clinical aspects of ocular anomalies □ Spectacle lens optics – Convergence through spectacle lens, prismatic effects	**22**
	TOTAL	**88**

Credit Distribution

Lecture/ Tutorial	Practicum	Experiential Learning
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

TEXTBOOK:

- **Binocular Vision and Ocular Motility** – Gunter K. von Noorden & Emilio C. Campos (6th or 7th Edition, Mosby)
- **Clinical Management of Binocular Vision: Heterophoric, Accommodative, and Eye Movement Disorders** – Mitchell Scheiman & Bruce Wick.

REFERENCE BOOKS

1. **Remington's Clinical Anatomy of the Visual System** – Jack J. Kanski
2. **Foundations of Binocular Vision: A Clinical Perspective** – Robert Cooper
3. **AAO BCSC Series – Section 6: Pediatric Ophthalmology and Strabismus** – American Academy of Ophthalmology
4. **EyeWiki** – https://eyewiki.aao.org

SYLLABUS (5TH SEM)

PAPER/SUBJECT NAME: OCULAR DISEASE II
SUBJECT CODE: OPT242M503
COURSE LEVEL: 300
SCHEME OF EVALUATION: (T) **L-T-P-C:4-0-0-4**
Total credits: 4

Course Objective:
The objective of this course is to deal with various ocular diseases affecting the **posterior segment of the eye** including retina, vitreous, choroid, and optic nerve. It covers clinical signs and symptoms, causes, pathophysiological mechanisms, diagnostic approaches, differential diagnoses, and medical/surgical management aspects of posterior segment ocular diseases.

Course Outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Apply knowledge of the different aspects of posterior segment ocular diseases to interpret clinical signs and symptoms, suggesting potential diagnoses	**BT 3**

CO 2	Analyze disease conditions and plan appropriate treatment or management strategies for posterior segment ocular pathologies	**BT 4**
CO3	Evaluate clinical findings using diagnostic tools like fundus examination, OCT, FFA, etc., for making informed decisions	**BT5**
CO4	Integrate systemic disease associations with posterior segment pathologies for holistic patient care.	**BT5**

SYLLABUS:

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	Diseases of the Vitreous Humor • Congenital anomalies • Vitreous opacities • Hereditary vitreo-retinal degenerations • Vitreous hemorrhage • Vitreous detachment • Vitreous surgery Clinical Assessment of the Posterior Segment • Direct ophthalmoscopy • Indirect ophthalmoscopy Diseases of the Retina • Congenital & developmental defects • Retinitis • Retinal vasculitis • Retinal oedema • Retinal hemorrhage • Vascular occlusion • Retinal arteriosclerosis • Retinopathies • Retinal telangiectasia • Degenerations • Retinal detachment & surgeries • Retinal tumors • Phakomatoses • Retinal injuries.	**22**

2	Optic Nerve Disorders • Congenital anomalies • Papilloedema • Optic neuritis (inflammatory) • Ischemic optic neuropathy (arteritic & non-arteritic) • Optic atrophy • Optic nerve tumors • Optic nerve injuries Visual Function Disturbances • Visual field defects • Amblyopia • Amaurosis • Night blindness • Day blindness • Color vision defects • Congenital word blindness • Malingering.	**22**

3	Neuro-ophthalmology • Evaluation of optic nerve disease • Clinical features and classification of optic neuritis • Demyelination and systemic links (e.g. multiple sclerosis) • Hereditary optic atrophies – Leber, Kjer, Behr, Wolfram • Toxic and nutritional optic neuropathies (alcohol-tobacco, drugs) Papilloedema & Raised ICP • Causes (e.g. hydrocephalus) • Systemic & ocular features • Differential diagnosis Congenital Optic Nerve Anomalies • Tilted disc, drusen, pits, myelinated fibers • Coloboma, morning glory anomaly, hypoplasia • Aicardi syndrome Pupillary Reactions • Anatomy • Afferent pupillary defects • Argyll Robertson pupil • Adie's tonic pupil • Horner's syndrome • Light-near dissociation	**22**

4	Nystagmus • Classification & causes • Physiological vs pathological • Nystagmoid movements Supranuclear Disorders of Eye Movements • Saccades, pursuits, reflexes • Gaze palsies (horizontal & vertical) Cranial Nerve Palsies • Third, fourth, sixth nerves • Anatomy, clinical features, causes • Aberrant regeneration Retrochiasmal Lesions & Visual Cortex • Optic tract/radiation lesions • Visual cortex disorders • Migraine (ocular features, management) Ocular Myopathies & Related Disorders • Myasthenia gravis • Myotonic dystrophy • Blepharospasm Neurofibromatosis • NF-1 & NF-2: Systemic and ocular signs.	**22**
	TOTAL	**88**

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

TEXTBOOK:

- **Parson's Diseases of the Eye** – Ramanjit Sihota & Radhika Tandon
- **Clinical Ophthalmology: A Systematic Approach** – Jack J. Kanski

REFERENCE BOOKS

- **Yanoff & Duker's Ophthalmology** – Benjamin J. Seidel, J. William Harbour
- **AAO BCSC Series** – Section 12: Retina and Vitreous
- **Retina** – Stephen J. Ryan (Expert reference, for advanced study)
- **EyeWiki** – https://eyewiki.aao.org

SYLLABUS (5TH SEM)

PAPER/SUBJECT NAME: BASICS OF LOW VISION
SUBJECT CODE: OPT242M504
COURSE LEVEL: 300
SCHEME OF EVALUATION: (T) **L-T-P-C:4-0-0-4**
Total credits: 4

Course Objective:

The course aims to prepare students to recognize low vision conditions and provide effective management plans using both optical and non-optical aids and counseling.

Course Outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Define and describe the basic concepts of low vision, including types and causes.	**BT 1**
CO 2	Identify and classify patients based on their low vision needs and functional vision loss.	**BT 2**
CO3	Apply appropriate low vision assessment techniques to evaluate residual vision.	**BT3**
CO4	Analyze patient needs and recommend suitable low vision aids and rehabilitation strategies.	**BT4**

SYLLABUS:

MODULE	TOPICS & COURSE CONTENT	PERIODS

1	□ Definition of low vision and blindness (WHO, NPCB, and legal definitions) □ Epidemiology of low vision in India and worldwide □ Classification of low vision based on visual acuity and visual field □ Common causes of low vision (ARMD, diabetic retinopathy, glaucoma, albinism, retinitis pigmentosa, etc.) □ Functional vision vs. clinical vision □ Psychological impact of low vision.	**22**
2	□ Case history taking for low vision patients □ Assessment of distance and near visual acuity (ETDRS, Feinbloom, MNREAD) □ Contrast sensitivity testing (Pelli-Robson, Lea contrast chart) □ Visual field testing in low vision □ Color vision assessment □ Reading speed and functional vision assessment □ Role of lighting and glare assessment.	**22**

3	□ Principles of magnification □ Optical aids: • High plus reading glasses • Handheld magnifiers • Stand magnifiers • Telescopes (bioptic, hand-held) □ Non-optical aids: • Reading stands • Typoscopes • Bold line pens • Large print books □ Electronic devices (CCTV, screen readers, video magnifiers) □ Training and adaptation to low vision aids	**22**
4	• Referral to vision rehabilitation centers • Orientation and mobility training • Counseling for patients and family • Educational and vocational rehabilitation • Low vision in children: causes and intervention • Low vision in the elderly: needs and approaches • Role of multidisciplinary teams in rehabilitation	**22**
	TOTAL	**88**

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

TEXTBOOK:

- Low Vision Manual – *Shrinivas Joshi*
- Low Vision Aids: A Practical Guide – *Dr. Subrata Chatterjee*

REFERENCE BOOKS

- Foundations of Low Vision: Clinical and Functional Perspectives – *Anne Corn & Jane Erin*
- Low Vision Rehabilitation: A Practical Guide for Occupational Therapists – *Mitchell Scheiman*
- Visual Impairment and Rehabilitation – *G.C. Woo*
- World Health Organization (WHO) Low Vision Guidelines
- VisionAware.org

SYLLABUS (5TH SEM)

PAPER/SUBJECT NAME: DISPENSING OPTICS II
SUBJECT CODE: OPT242M505
COURSE LEVEL: 300
SCHEME OF EVALUATION: (T) **L-T-P-C:4-0-0-4**
Total credits: 4

Course Objective:
To impart advanced knowledge and clinical skills related to spectacle dispensing, focusing on special lenses, frame selection, facial measurements, problem-solving, and advanced fitting techniques to meet individual visual and cosmetic needs.

Course Outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	Understand workplace vision demands and the role of optometry in occupational health	**BT 2**
CO 2	Demonstrate knowledge of laws, ethics, and registration requirements related to optometry practice	**BT 2**
CO3	Conduct visual task analysis and suggest ergonomic modifications in various professions	**BT3**
CO4	Analyze legal cases, interpret policies, and apply public health laws relevant to optometric practice	**BT4**

SYLLABUS:

MODULE	TOPICS & COURSE CONTENT	PERIODS

1	□ Introduction to special lenses: aspheric, atoric, lenticular, prism-controlled □ High-index lenses: features, indications □ Lenticular lenses: design and use □ Anisometropia and prismatic imbalance correction (Slab-off, Reverse slab-off) □ Prescribing for high myopia, hyperopia, and pediatric cases □ Occupational lenses and sports lenses	**22**
2	□ Advanced frame types and materials (memory alloys, TR90, rimless systems) □ Frame selection based on face shape, prescription, age, and use □ Facial measurements: monocular PD, fitting height, pantoscopic tilt, wrap angle □ Custom frame fitting and alignment techniques □ Frame repair and reshaping	**22**
3	□ □ Types of multifocal lenses: bifocals, trifocals, occupational designs □ Progressive addition lenses (PAL): designs, markings, fitting & measurements □ PAL troubleshooting: non-adaptation, swim effect, corridor length issues □ Measurement and adjustment of seg height, near inset, corridor width □ Adaptation counseling techniques for new PAL users	**22**

4	• Common dispensing complaints and solutions (visual discomfort, slippage, etc.) • Rechecking measurements and verifying prescriptions • Lens warpage, scratches, coatings failures • Aftercare: frame cleaning, nose pad changes, temple tip adjustments • Soft skills in dispensing: communication, empathy, counseling • Legal and ethical aspects in dispensing practice	**22**
	TOTAL	**88**

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

TEXTBOOK:

1. C.V. Brooks & I.M. Borish. *System for Ophthalmic Dispensing*, 3rd Edition, Elsevier, 2006. ISBN: 978-0750674801
2. David Wilson & John F. Borish. *Clinical Dispensing Optics*, Butterworth-Heinemann, 2007. ISBN: 978-0750688969

REFERENCE BOOKS

 Clifford W. Brooks. *Essentials of Ophthalmic Lens Finishing*, 2nd Edition, Butterworth-Heinemann, 2003. ISBN: 978-0750674801

 John Mountford et al. *Progress in Lens Design*, 1st Edition, ABDO Publishing

 Naomi R. Kelly. *Ophthalmic Dispensing*, 1st Edition, Butterworths, 1990. ISBN: 978-0407004208

SYLLABUS (6TH SEM)

PAPER /SUBJECT NAME: APPLIED OPTOMETRY & ORTHOPTICS + APPLIED OPTOMETRY & ORTHOPTICS LAB
SUBJECT CODE: OPT242M601/ OPT242M611
SCHEME OF EVALUATION: (TP)
Total Credits: 04 **L-T-P-C = 3-0-2-4**

Course Objective:

The objective of the subject is to study the different orthoptic instruments, procedures, management and treatment.

Course outcome:

CO Levels	Course Outcome	Blooms Taxonomy Level
CO 1	**To understand** the different orthoptic instruments.	**BT 1**
CO 2	**To interpret** the procedures, Assessment of degree of squint, ocular motality status, binocular single vision and types of squint.	**BT 2**
CO 3	**To determine** the orthoptic treatment procedure and management.	**BT 3**
CO 4	**To explain** the definition, neuropathology, classification, clinical features, treatment of Amblyopia.	**BT 4**

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	ORTHOPTIC INSTRUMENTS Prism Bar Synoptophore Maddox Wing Maddox Rod Red Green Goggles Hess Screen Risley Prisms	16
2	Investigative procedures Motor signs in squint A) Head position: Face turn, chin position, Head tilt. B) Cover test & cover-uncover tests C) Maddox wing to assess heterophoria. Assessment of degree of squint a) Hirschbag test. b) Prism bar test. c) Krimskey test	16

	d) Synoptophore test Assessment of ocular motality status a) Hess chart b) Diplopia testing c) Bielschowskys Head tilting test Assessment of visual sensory status in squint. Amblyopia Suppression Binocular single vision – SMP, Fusion, Stereopsis. Mechanisms leading to squint Types of squint – a) latent / manifest b) horizontal / vertical c) paralytic / concomitant	
3	Orthoptic Treatment Procedures Management of – Convergence insufficiency Amblyopia Suppresion ARC Use of prism - For Exercise & correction	17
4	AMBLYOPIA Definition. Neuropathology. Classification. Clinical Features. Treatment. a) Occlusion. b) Penalisation. c) Role of drugs	17

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

PRACTICAL

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	Demonstration of following Orthoptic instruments/methods and their uses –	7

	Prism Bar Synoptophore Maddox Wing Maddox Rod Red Green Goggles RAF Gauge	
2	Cover test Hirschberg test Krimsky test Diplopia charting Visuoscopy Accommodative flipper	7
3	Orthoptic Investigative & Therapeutic Procedure	8
4	Case records AND Case Handling	8

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

TEXTBOOK:

AK Khurana, 2018, Theory and Practice of Squint and Orthoptics, CBS Publishers and Distributors.

REFERENCE BOOKS:

1. **Eugene Helveston.** *Applied Optics and Clinical Refraction*, 3rd edition, Butterworth-Heinemann, 2002. ISBN: 978-0750674539
2. **Gerald F. Krenzer.** *Orthoptics and Vision Therapy*, 3rd edition, Butterworth-Heinemann, 2002. ISBN: 978-0750672870
3. **Robert W. Arnold, Suzanne M. Arnold.** *Clinical Manual of Pediatric Orthoptics*, 2nd edition, Slack Incorporated, 2014. ISBN: 978-1556429267
4. **David B. Elliott.** *Clinical Procedures in Primary Eye Care*, 4th edition, Elsevier, 2020. ISBN: 978-0702077562

SYLLABUS (6TH SEM)

PAPER /SUBJECT NAME: LOW VISION AIDS & VISUAL REHABILITATION + LOW VISION AIDS & VISUAL REHABILITATION LAB
SUBJECT CODE: OPT242M602/ OPT242M612
SCHEME OF EVALUATION: (TP)
Total Credits: 04 **L-T-P-C =3-0-2-4**

Course Objective:

The objective of the subject is to study the definition of low vision, its magnification, grades, assessments, refraction, and low vision prescription.

Course outcome:

CO Levels	Course Outcome	Blooms Taxonomy Level
CO 1	**To understand** the Components of low vision evaluation, Contrast sensitivity and color vision assessment, Importance of patient history and counseling.	**BT 1**
CO 2	**To interpret** the Principles and goals of visual rehabilitation and training in using low vision aids.	**BT 2**
CO 3	**To determine** the resources and support services of low vision.	**BT 3**
CO 4	**To explain** the prescription and fitting of low vision aids.	**BT 4**

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	**Low Vision Assessment:** Components of a low vision evaluation, Visual acuity and visual field testing, Contrast sensitivity and color vision assessment, Importance of patient history and counseling.	16
2	**Visual Rehabilitation:** Principles and goals of visual rehabilitation, Training in using low vision aids, Strategies for improving visual skills: Scanning and visual search techniques, Eccentric viewing, Lighting and glare management; Importance of self-advocacy and independent living skills	16

3	**Resources and Support Services:** Government programs and community resources for individuals with low vision, Support groups and peer counseling, Assistive technology training and support centers, Ethical considerations in low vision care, Role of optometrists, ophthalmologists, occupational therapists, and orientation and mobility specialists, Team-based approach to assessment and intervention planning, Communication and coordination among healthcare professionals.	17
4	**Prescribing and Fitting Low Vision Aids:** Prescription guidelines and calculations, Demonstration and trial of aids, Adjustment and customization of aids, Follow-up and troubleshooting, Aids prescription based on different anomalies. **Visual Rehabilitation Training:** Techniques for using optical aids effectively, Developing compensatory strategies for specific tasks, Orientation and mobility training, Psychosocial support and adjustment counseling, Counseling of low vision patient/ parents/ guardians/relatives.	17

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

PRACTICAL

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	Case history	7
2	Assessment.	7
3	Application of devices.	8
4	Rehabilitation.	8

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

Textbook:

"Low Vision Rehabilitation: A Practical Guide for Occupational Therapists" by Mitchell Scheiman and Bruce Rosenthal.

Reference Books –

1. **Janet Marsack, James R. Wolf, Gerard E. Fischmann.** *Low Vision Rehabilitation: A Practical Guide for Occupational Therapists*, 1st edition, Slack Incorporated, 2017. ISBN: 978-1630911900
2. **Mark S. Wilkinson, Christina M. Lewis.** *Low Vision Rehabilitation: A Guide for Occupational Therapy Practice*, 2nd edition, AOTA Press, 2013. ISBN: 978-1569003671
3. **Richard B. Ruth.** *Low Vision and Vision Rehabilitation*, 1st edition, Mosby, 1996. ISBN: 978-0815163565
4. **Janet L. Weiss, Bruce E. Spivey.** *Vision Rehabilitation: Multidisciplinary Care of the Patient with Visual Loss*, 1st edition, Springer, 2013. ISBN: 978-1461454191

SYLLABUS (6TH SEM)

PAPER /SUBJECT NAME: SYSTEMIC CONDITION & THE EYE
SUBJECT CODE: OPT242C604
SCHEME OF EVALUATION: (T)
Total Credits: 04 **L-T-P-C = 4-0-0-4**

Course Objective:

The objective of the subject is to study the different systemic diseases, its classification, clinical features, diagnosis, complications, and management.

Course outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**To understand** Diabetes mellitus, Hypertension, Acquired Heart Disease and its pathophysiology, classification, clinical features, diagnosis, complications and management.	**BT 1**

CO 2	**To interpret** the definition, classification and clinical features of malignancy, connective tissue disorder and thyroid disease.	**BT 2**
CO 3	**To determine** the etiology, pathology, clinical features of tuberculosis, tropical diseases, vitamin deficiency and the eye.	**BT 3**
CO 4	**To explain** the neurological disorders and the eye, genetic disorders and phacomatosis.	**BT 4**

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	Arterial Hypertension i) Pathophysiology, classification, clinical examination, diagnosis, complications, management. ii) Hypertension and the eye. Diabetes mellitus i) Pathophysiology, classification, clinical features, diagnosis, complications, management. ii) Diabetes mellitus and the eye. Acquired Heart Disease – Embolism i) Rheumatic heart disease ii) Subacute bacterial endocarditis. iii) Heart disease & the eye	22
2	Malignancy i) Definitions, nomenclature, characteristics of benign & malignant neoplasms. ii) Grading and staging of cancer, diagnosis, priniples of treatment. iii) Neoplasia and the eye. Connective Tissue Disease i) Anatomy and pathophysiology: Arthritis. ii) Eye and connective tissue disease. Thyroid Disease i) Anatomy and physiology of the thyroid gland. ii) Classification of thyroid disease iii) Diagnosis, complications, clinical features, management of thyroid disease involving eye.	22
3	Tuberculosis i) Etiology, pathology, clinical features, pulmonary TB, diagnosis, complications, treatment of tuberculosis involving the eye. Tropical Disease and the Eye i) Leprosy. ii) Syphilis. iii) Malaria.	22

	Vitamin deficiency and the eye	
4	Neurological disease and the eye i) Classification of neurological diseases. ii) Demyelinating diseases iii) Visual pathway lesions iv) Papiloedema. Genetic disorders and the eye. Phacomatoses & the eye	22

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

TEXTBOOK:

S Pramod, 2017, Medical Surgical Nursing Systemic Disease, Jaypee Brothers Medical Publishers.

Reference Books – Systemic Conditions & The Eye

1. **Frank J. Kreutzer, David G. Albert.** *Neuro-Ophthalmology: Diagnosis and Management*, 2nd edition, Elsevier, 2009. ISBN: 978-1416051836
2. **Terry J. Smith, John J. Chen.** *Systemic Disease and the Eye*, 3rd edition, Butterworth-Heinemann, 2011. ISBN: 978-0750684918.

SYLLABUS (6TH SEM)

PAPER /SUBJECT NAME: CONTACT LENS II
SUBJECT CODE: OPT242M603/ OPT242M613
SCHEME OF EVALUATION: (T)
Total Credits: 04 **L-T-P-C = 4-0-0-4**

Course Objective:

The objective of the subject is to study the concept of contact lens, its benefits, manufacturing and understand briefly about soft contact lens and RGP contact lens.

Course outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO 1	**To understand** the history, development, benefits and manufacturing of contact lens.	**BT 1**
CO 2	**To interpret** the optics, classification, vertex distance and FDA classification of contact lens and its materials.	**BT 2**
CO 3	**To determine** the indications and contraindications of contact lens and soft contact lens fitting and assessment.	**BT 3**
CO 4	**To explain** RGP contact lens fitting, assessment, care and maintenance.	**BT 4**

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	• Contact lens history & development. Benefits of contact lens over spectacle. □ Contact lens power calculation □ Keratometry and extended keratometry □ Slit lamp examination technique for contact lenses □ Corneal topography: principles and interpretation □ Over-refraction techniques □ Patient pre-screening and selection criteria	22
2	□ Indications and contraindications □ Soft spherical lens fitting and assessment	22

	□ RGP spherical lens fitting and assessment □ RGP vs soft lens comparison (fitting and outcomes) □ Care and maintenance for soft and RGP lenses □ Contact lens follow-up protocols □ Common complications with soft/RGP lenses and management.	
3	□ Toric contact lenses: indication, design, axis, and stability □ Multifocal/presbyopic contact lenses: simultaneous and translating designs □ Keratoconus management: Rose K, hybrid, and mini-scleral lenses □ Orthokeratology (Ortho-K): concept, fitting, safety and follow-up.	22
4	• PROSE lenses and ocular surface prosthetics □ Pediatric contact lenses: special considerations and fitting □ Post-surgical and irregular cornea contact lenses □ Role of contact lenses in therapeutic and cosmetic cases.	22

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

PRACTICAL

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	Soft Contact Lens Assessment	7
2	RGP Contact Lens Fitting	7
3	Specialty Lens Overview	8

4	Complications & Follow-up.	8

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

TEXTBOOK:

Agarwal S, 2005, Dr. Agarwals' Textbook on Contact Lenses, Jaypee Brothers Medical Publishers.
Sinha R, 2017, Textbook of Contact Lenses, Jaypee Brothers Medical Publishers.

Reference Books

1. **Nathan Efron.** *Contact Lens Practice*, 4th edition, Elsevier, 2013. ISBN: 978-0702042508
2. **Milton Hom, Adrian Bruce.** *Manual of Contact Lens Prescribing and Fitting*, 3rd edition, Butterworth-Heinemann, 1995. ISBN: 978-0750600405
3. **Edward S. Bennett, Craig W. Borovoy.** *Clinical Contact Lens Practice*, 2nd edition, Lippincott Williams & Wilkins, 2006. ISBN: 978-0781740589
4. **Ruth B. Peters.** *Contact Lens Complications*, 3rd edition, Butterworth-Heinemann, 2006. ISBN: 978-0750687751

SYLLABUS (6TH SEM)

PAPER /SUBJECT NAME: CLINICAL POSTING
SUBJECT CODE: OPT242N615
SCHEME OF EVALUATION: (P)
Total Credits: 04 **L-T-P-C = 0-0-8-4**

Course Objective:

To provide hands-on clinical experience in real-world optometric settings, developing patient care skills, decision-making, and professional conduct through supervised practice.

Course outcome:

On successful completion of the course the students will be able to:

CO Levels	Course Outcome	Blooms Taxonomy Level
CO 1	Perform comprehensive eye examinations, including refraction and contact lens fitting independently	**BT 3**
CO 2	Assess and assist in managing low vision, binocular vision, and ocular motor conditions.	**BT 3**
CO 3	Demonstrate clinical proficiency in using diagnostic instruments and interpreting key findings	**BT 4**
CO 4	Exhibit professionalism, accurate documentation, and patient-centered care in clinical environments	**BT 4**

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	• Basic ocular examination	22
2	Refraction and Contact lens practice	22
3	Low vision and Binocular vision assessment.	22
4	• Dispensing, Documentation & Ethics.	22

Credit Distribution		
Lecture/ Tutorial	**Practicum**	**Experiential Learning**
2*22 =44 NCH	2*15= 30 NCH	2*8=16nch (Assignments, Quizzes, Seminar, Case Study, Discussion)

SYLLABUS (7TH SEM)

PAPER /SUBJECT NAME: PEDIATRIC CLINIC SPECIALITY
SUBJECT CODE: OPT242M721

SCHEME OF EVALUATION: (P)

Total Credits: 4 **L-T-P-C=0-0-8-4**

Course Objective:

To provide hands-on clinical exposure to students in core optometric departments, enabling them to apply theoretical knowledge and diagnostic skills in real patient care environments.

Course Outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO1	Demonstrate effective communication skills for counseling patients and caregivers	BT 3
CO2	Evaluate ocular disorders in pediatric and geriatric patients using age-appropriate diagnostic tools.	BT 4
CO3	Design individualized treatment plans for refractive errors, amblyopia, and age-related eye diseases	BT 5

SYLLABUS: PRACTICAL

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	Assess visual acuity using age-appropriate charts like Lea symbols or Cardiff cards.	**15**

2	Perform Hirschberg, cover tests, and Bruckner's test to detect strabismus and binocular vision issues.	**15**
3	Conduct cycloplegic retinoscopy to determine accurate refractive status in children.	**15**
4	Examine ocular health for pediatric conditions like congenital cataract and retinal anomalies.	**15**
	TOTAL	**60**

SYLLABUS (7TH SEM)
PAPER /SUBJECT NAME: GERIATRIC CLINIC SPECIALITY **SUBJECT CODE: OPT242M722** **SCHEME OF EVALUATION: (P)** **Total Credits: 4** **L-T-P-C=0-0-8-4**

Course Objective:

To provide hands-on clinical exposure to students in core optometric departments, enabling them to apply theoretical knowledge and diagnostic skills in real patient care environments.

Course Outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO1	Demonstrate effective communication skills for counseling patients and caregivers	BT 3
CO2	Evaluate ocular disorders in pediatric and geriatric patients using age-appropriate diagnostic tools.	BT 4

CO3	Design individualized treatment plans for refractive errors, amblyopia, and age-related eye diseases	BT 5
CO4	Examine and evaluate geriatric ocular diseases.	BT 6

SYLLABUS: PRACTICAL

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	Conduct full eye exams with adaptations for elderly patients.	**15**
2	Screen for age-related diseases such as cataract, glaucoma, and ARMD.	**15**
3	Assess low vision needs and introduce basic rehabilitation aids.	**15**
4	Identify ocular effects of systemic conditions like diabetes and hypertension.	**15**
	TOTAL	**60**

SYLLABUS (7TH SEM)	
PAPER/SUBJECT NAME: CONTACT LENS SPECIALITY	
SUBJECT CODE: OPT242M723	
SCHEME OF EVALUATION: (P)	
Total Credits: 5	**L-T-P-C=0-0-10-5**

Course Objective:

To provide hands-on clinical exposure to students in core optometric departments, enabling them to apply theoretical knowledge and diagnostic skills in real patient care environments.

Course Outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO1	Apply fitting principles for soft, rigid, and specialty lenses.	BT 3
CO2	Diagnose contact lens-related complications (e.g., dry eye, infections).	BT 4
CO3	Design patient education protocols for lens hygiene.	BT 6
CO4		

SYLLABUS: PRACTICAL

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	Basics of Contact Lenses: Materials, designs, and indications/contraindications	**15**
2	Clinical Fitting: Corneal topography, tear film assessment, trial lens fitting	**15**
3	Complications & Management: GPC, microbial keratitis, and solution allergies	**15**
4	Specialty Lenses: Scleral, hybrid, and ortho-k lenses	**15**
	TOTAL	**60**

SYLLABUS (7TH SEM)	
PAPER/SUBJECT NAME: BINOCULAR VISION SPECIALITY **SUBJECT CODE: OPT242M724** **SCHEME OF EVALUATION: (P)**	
Total Credits: 4	**L-T-P-C=0-0-8-4**

Course Objective:

To provide hands-on clinical exposure to students in core optometric departments, enabling them to apply theoretical knowledge and diagnostic skills in real patient care environments.

Course Outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO1	Interpret diagnostic tests (cover test, AC/A ratio) for binocular vision disorders.	BT 4
CO2	Assess therapy outcomes using evidence-based criteria.	BT 5
CO3	Develop vision therapy programs for strabismus/amblyopia.	BT 6

SYLLABUS: PRACTICAL

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	Binocular Vision Basics: Fusion, stereopsis, and suppression	**15**
2	Assessment: NPC, vergence testing, accommodative facility	**15**
3	Disorders & Management: Strabismus, amblyopia, and diplopia	**15**

4	Vision Therapy: Exercises, prism adaptation, and patient compliance	**15**
	TOTAL	**60**

SYLLABUS (7TH SEM)
PAPER /SUBJECT NAME: LOW VISION SPECIALITY **SUBJECT CODE: OPT242M725** **SCHEME OF EVALUATION: (P)** **Total Credits: 4** **L-T-P-C=0-0-8-4**

Course Objective:

To provide hands-on clinical exposure to students in core optometric departments, enabling them to apply theoretical knowledge and diagnostic skills in real patient care environments.

Course Outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO1	Analyze visual function data to classify low vision severity.	BT 4
CO2	Appraise patient outcomes post-rehabilitation	BT 5
CO3	Create rehabilitation plans using optical/non-optical aids.	BT 6

SYLLABUS: PRACTICAL

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	Introduction to Low Vision: Causes, classifications, and impact on daily life	**15**
2	Assessment Techniques: Visual acuity, visual fields, and contrast sensitivity testing	**15**
3	Low Vision Aids: Optical/non-optical devices, assistive technologies	**15**
4	Rehabilitation Strategies: Orientation/mobility training, patient counseling	**15**
	TOTAL	**60**

SYLLABUS (8TH SEM)	
PAPER/SUBJECT NAME: CLINICAL EVALUATION	
SUBJECT CODE: OPT242M821	
SCHEME OF EVALUATION: (P)	
Total Credits: 7	**L-T-P-C=0-0-14-7**

Course Objective:

To deepen the student's clinical expertise by involving them in advanced optometric care including specialty clinics and interdisciplinary eye care approaches.

Course Outcome:

On successful completion of the course the students will be able to:

CO Levels	Course Outcome	Blooms Taxonomy Level
CO1	Correlate ocular findings with systemic diseases (e.g., diabetes).	BT 4
CO2	Integrate advanced diagnostic tools (OCT, visual fields) into clinical practice.	BT 5
CO3	Formulate comprehensive management plans	BT 6
CO4	Examine and evaluate different ocular conditions.	BT6

SYLLABUS: PRACTICAL

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	Advanced Diagnostics: Electrophysiology, advanced imaging techniques	**15**
2	Systemic & Ocular Disease Correlation	**15**
3	Case Presentation & Documentation	**15**
4	Conduct full eye exams with adaptations for elderly patients.	**15**
	TOTAL	**60**

SYLLABUS (8TH SEM)

PAPER/SUBJECT NAME: CLINICAL EVALUATION

SUBJECT CODE: OPT242M811

SCHEME OF EVALUATION: (P)

Total Credits: 4 **L-T-P-C=0-0-8-4**

Course Objective:

To deepen the student's clinical expertise by involving them in advanced optometric care including specialty clinics and interdisciplinary eye care approaches.

Course Outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO1	Correlate ocular findings with systemic diseases (e.g., diabetes).	BT 4
CO2	Integrate advanced diagnostic tools (OCT, visual fields) into clinical practice.	BT 5
CO3	Formulate comprehensive management plans	BT 6

SYLLABUS: PRACTICAL

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	Advanced Diagnostics: Electrophysiology, advanced imaging techniques	**15**
2	Systemic & Ocular Disease Correlation	**15**
3	Case Presentation & Documentation	**15**

4	Conduct full eye exams with adaptations for elderly patients.	**15**
	TOTAL	**60**

SYLLABUS (8TH SEM)	
PAPER/SUBJECT NAME: COMPREHENSIVE CLINICAL OPTOMETRY **SUBJECT CODE: OPT242M822** **SCHEME OF EVALUATION: (P)**	
Total Credits: 08	**L-T-P-C=0-0-16-8**

Course Objective:

To deepen the student's clinical expertise by involving them in advanced optometric care including specialty clinics and interdisciplinary eye care approaches.

Course Outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO1	Respond to ocular emergencies (trauma, infections).	BT 3
CO2	Collaborate with healthcare teams for patient-centered care.	BT 5
CO3	Synthesize knowledge to manage complex multi-specialty cases.	BT 6

SYLLABUS: PRACTICAL

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	Integrated Case Management	**15**
2	Emergency Optometry	**15**

3	Interprofessional Collaboration	**15**
4	Examine anterior and posterior segments using slit lamp and direct/indirect ophthalmoscopy.	**15**
	TOTAL	**60**

SYLLABUS (8TH SEM)
PAPER/SUBJECT NAME: DISSERTATION **SUBJECT CODE: OPT242M823** **SCHEME OF EVALUATION: (P)** **Total Credits: 12**

Course Objective:

To deepen the student's clinical expertise by involving them in advanced optometric care including specialty clinics and interdisciplinary eye care approaches.

Course Outcome:

On successful completion of the course the students will be able to:		
CO Levels	**Course Outcome**	**Blooms Taxonomy Level**
CO1	Respond to ocular emergencies (trauma, infections).	BT 3
CO2	Collaborate with healthcare teams for patient-centered care.	BT 5
CO3	Synthesize knowledge to manage complex multi-specialty cases.	BT 6

SYLLABUS:

MODULE	TOPICS & COURSE CONTENT	PERIODS
1	Research Methodology & Proposal Writing	
2	Data Collection	
3	Data Analysis	
4	Dissertation Submission & Viva	