INTEGRAL UNIVERSITY, LUCKNOW

INTEGRAL INSTITUTE OF ALLIED HEALTH SCIENCES & RESEARCH

DEPARTMENT OF PARAMEDICAL SCIENCES

BACHELOR OF OPTOMETRY
(B.OPTOM)

SYLLABUS

YEAR/ SEMESTER: III/V

Integral University, Lucknow
Department of Paramedical Sciences
Study and Evaluation Scheme

Program: BOPT Semester-V

S. N.	Course code	Course Title	Type of Paper	Period Per hr/week/sem			Evaluation Scheme				Sub. Total	Credit	Total Credits
				L	T	P	CT	TA	Total	ESE			
THEORIES													
1	BO301	Contact Lens – I	Core	3	1	0	40	20	60	40	100	3:1:0	4
2	BO302	Geriatric Optometry & Pediatric Optometry	Core	3	1	0	40	20	60	40	100	3:1:0	4
3	BO303	Binocular Vision – I	Core	3	1	0	40	20	60	40	100	3:1:0	4
4	BO304	Systemic Disease & the Eye	Core	3	1	0	40	20	60	40	100	3:1:0	4
5	BO305	Occupational & Community Optometry	Core	3	1	0	40	20	60	40	100	3:1:0	4
PRACTICAL													
1	BO306	Contact Lens –Lab	Core	0	0	2	40	20	60	40	100	0:0:1	1
2	BO307	Geriatric Optometry & Pediatric Optometry-Lab	Core	0	0	2	40	20	60	40	100	0:0:1	1
3	BO308	Hospital Posting	Core	0	0	6	40	20	60	40	100	0:0:3	3
Total				**15**	**05**	**10**	**320**	**160**	**480**	**320**	**800**	**25**	**25**

S. N.	Course code	Course Title	Type of Paper	Attributes							United Nation Sustainable Development Goal (SDGs)
				Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
THEORIES											
1	BO301	Contact Lens – I	Core	√	√	√	√		√	√	3,4
2	BO302	Geriatric Optometry & Pediatric Optometry	Core	√	√	√	√		√	√	3,4
3	BO303	Binocular Vision – I	Core	√	√	√	√		√	√	3,4
4	BO304	Systemic Disease & the Eye	Core	√	√	√	√		√	√	3,4
5	BO305	Occupational & Community Optometry	Core	√	√	√	√		√	√	3,4
PRACTICAL											
1	BO306	Contact Lens –Lab	Core	√	√	√	√		√	√	3,4
2	BO307	Geriatric Optometry & Pediatric Optometry-Lab	Core	√	√	√	√		√	√	3,4
3	BO308	Hospital Posting	Core	√	√	√	√		√	√	3,4

L: Lecture **T:** Tutorials **P:** Practical **CT:** Class Test **TA:** Teacher Assessment **ESE:** End Semester Examination,
AE= Ability enhancement, DSE- Discipline Specific Elective, **Sessional Total:** Class Test + Teacher Assessment **Subject Total:** Sessional Total + End Semester Examination (ESE)

Integral University, Lucknow

Effective from Session: 2023-24							
Course Code	**BO301**	**Title of the Course**	**CONTACT LENS-I**	**L**	**T**	**P**	**C**
Year	**III**	**Semester**	**V**	**3**	**1**	**0**	**4**
Pre-Requisite	**Nil**	**Co-requisite**	**Nil**				
Course Objectives	To enable the students to have knowledge in both theoretical and practical aspects of Contact Lenses.						

Course Outcomes	
CO1	Understanding about contact lens history, introduction, design & relation with structure of eye.
CO2	Understanding about RGP contact lens material & their property their parameter.
CO3	Understanding about RGP contact lens manufacturing techniques & fitting of RGP lenses.
CO4	Understanding and know about care maintenance and do's & don't of RG P contact lens.
CO5	Learn about complication and their management of RGP contact Lenses.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	**INTRODUCTION TO CONTACT LENSES & OPTICS**	1. History of Contact lenses. 2. Related ocular anatomy and physiology. 3. Contact Lens materials, terminology, classification. 4. Optics of Contact Lenses, comparison spectacles. 5. Indications and contraindications of Contact lenses. 6. Advantages and disadvantages of types of Contact lenses	8	CO1
2	**CONTACT LENS MATERALS & PRE-FITTING.**	1. Introduction & types of RGP materials 2. Manufacturing Rigid Contact Lenses – various methods. 3. Pre-Fitting examination – steps, significance, recording of results. 4. Instruments used for examination and special Investigations in pre-fitting examinations. 5. Keratometry and Corneal topography. 6. Slit lamp examination. 7. Fitting philosophies of Contact Lenses – general outline. 8. Fitting Rigid Contact Lenses.	8	CO2
3	**CONTACT LENS FITTING & ASSESSMEN T**	1. Insertion & removable of RGP 2. Using trial lenses – calculations involved. 3. Methods of assessment of Contact Lens fit- dynamic & static. 4. Types of fit – Steep, Flat, Optimum 5. Calculation and finalizing of Contact lens parameters. 6. Modifications possible with Rigid lenses.	8	CO3
4	**CARE AND MAINTENANCE OF RIGID LENSES**	1. Components of Lens Care systems for Rigid lenses. 2. Contact lens solutions – composition, necessity, advantages.	8	CO4
5	**HANDLING OF CONTACT LENSES**	1. Contact lens deposit, Complications. 2. Teaching the patient to insert and remove Rigid lenses. 3. Common handling instructions to first time wearers. 4. Special instructions to the patient wearing Rigid Gas Permeable Contact Lenses.	8	CO5

Reference Books:

1. Contact Lenses – Dr. V.K. Dada.
2. Contact Lenses Practice - Robbert B. Mandell
3. Contact lens primer by Monica Chaudhary, Jaypee Brothers medical publishers (P) Ltd
4. IACLE Contact lens modules.
5. Contact lens primer by Monica Chaudhary, Jaypee Brothers medical publishers (P) Ltd.
6. Contact Lenses- Anthony Phillips, Lynne Speedwell.

e-Learning Source:

1. https://www.youtube.com/watch?v=ey7kpRQYaao
2. https://www.youtube.com/watch?v=wlPyYkq3LnY
3. https://www.youtube.com/watch?v=w7skd-AA1PQ

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
CO1	1	3	1	2	-	-	-	1	2	1	-	2	2	1	2	-	1	3
CO2	2	3	2	2	-	-	-	1	3	1	-	3	2	2	1	-	2	3
CO3	1	3	1	2	-	-	-	1	2	-	-	2	2	1	2	-	1	3
CO4	2	3	1	2	-	-	-	1	3	-	-	3	2	2	3	-	2	3
CO5	1	3	1	2	-	-	-	1	2	1	-	2	2	1	2	-	1	3

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
BO301	CONTACT LENS-I	√	√	√			√	√	**3,4**

Integral University, Lucknow

Effective from Session: 2023-24							
Course Code	**BO302**	**Title of the Course**	**GERIATRIC OPTOMETRY & PEDIATRIC OPTOMETRY**	**L**	**T**	**P**	**C**
Year	**III**	**Semester**	**V**	**3**	**1**	**0**	**4**
Pre-Requisite	**Nil**	**Co-requisite**	**Nil**				
Course Objectives	The objective of the course is to provide the students with the knowledge of general and ocular physiological changes of ageing, common geriatric systemic and ocular diseases, clinical approach of geriatric patients and spectacle dispensing aspects in ageing patients as well as the development of the eye and vision, vision assessment and management of vision disorder in pediatric patients.						

Course Outcomes	
CO1	Understanding the concept of structural and functional changes in elderly eye.
CO2	Understanding the concept of systemic diseases of geriatric and pediatric patients.
CO3	Applying concept of optometric Evaluation procedure in children and elderly patients.
CO4	Understanding the concept of ocular drainage and other mechanical systems in children and elderly patients.
CO5	Utilizing the concept of various optical and primarily medicated intervention and the therapeutic procedure in children and elderly patients.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	**OCULAR COMPLICATION**	1. Structural changes in eye. 2. Physiological changes in eye. 3. Optical and refractive changes in eye.	8	CO1
2	**GERIATRIC OCULAR COMPLICATION**	1. Ocular diseases common in old age, with special reference to ARMD, cataract, glaucoma, macular disorders, vascular diseases.	8	CO2
3	**GERIATRIC DISPENSING**	1. Low vision causes, management and rehabilitation in geriatrics. 2. Spectacle dispensing in elderly–Considerations of spectacle lenses and frames	8	CO3
4	**PEDIATRIC DEVELOPMENT**	1. The Development of Eye and Milestone. 2. History taking Pediatric Optometry. 3. Assessment of visual acuity and determining binocular status	8	CO4
5	**PEDIATRIC OCULAR COMPLICATION**	1. Normal appearance, pathology and structural anomalies of Orbit, Eye lids, Lacrimal system, Conjunctiva, Cornea, Anterior chamber, Uveal tract, Pupil. 2. Pediatric eye disorders: Ophthalmia Neonatorum, Cataract, Retinopathy of Prematurity, Retinoblastoma.	8	CO5

Reference Books:

1. Clinical Geriatric Eye Care – Sheree Aston, Joseph Maino – Butterworth Heinemann.
2. Pediatric Optometry –William Harvey/Bernard Gilmartin, Butterworth –Heinemann, 2004.
3. OP Sharma: Geriatric Care–A text book of geriatrics and Gerontology, Viv books, NewDelhi,2005.
4. VS Natarajan: An update on Geriatrics, Sakthi Pathipagam, Chennai,1998
5. DE Rosenblatt, VS Natarajan: Primer on geriatric Care A clinical approach to the older patient, Printers Castle, Cochin,2002
6. Binocular Vision and Ocular Motility-VON NOORDEN G K Burien Von Noorden's, 2nd Ed., C.V. Mosby Co. St. Louis,1980
7. Assessing Children's Vision. By Susan J Leat, Rosalyn H Shute, Carol AWestall.45 Oxford: Butterworth-Heinemann,1999.
8. Clinical pediatric optometry. LJ Press, BD Moore, Butter worth-Heinemann,1993.
9. V S Natarajan: An update on Geriatrics, Sakthi Pathipagam, Chennai,1998
10. Clinical pediatric optometry. LJ Press, B D Moore, Butterworth-Heinemann,1993

e-Learning Source:

1. https://www.youtube.com/watch?v=X7zRRpiazwE
2. https://www.youtube.com/watch?v=lGW_D7YkRGs
3. https://www.youtube.com/watch?v=IS4os7obS0s

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1	3	1	2	-	-	-	1	2	-	-	2	2	1	-	1	-	1
CO2	1	3	1	3	-	-	-	1	3	-	-	3	3	2	-	2	-	1
CO3	1	3	1	2	-	-	-	1	2	-	-	2	3	1	-	1	-	1
CO4	1	3	1	2	-	-	-	1	3	-	-	3	2	1	-	1	-	1
CO5	1	3	1	2	-	-	-	1	2	-	-	2	2	1	-	1	-	1

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
BO302	GERIATRIC OPTOMETRY & PEDIATRIC OPTOMETRY	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
		√	√	√	√		√	√	3,4

Integral University, Lucknow

Effective from Session: 2023-24							
Course Code	**BO303**	**Title of the Course**	**BINOCULAR VISION-I**	**L**	**T**	**P**	**C**
Year	**II**	**Semester**	**III**	**3**	**1**	**0**	**4**
Pre-Requisite	**Nil**	**Co-requisite**	**Nil**				
Course Objectives	The objective of the course is to provide the students the basics of Binocular Vision and its clinical co-relation.						

Course Outcomes	
CO1	Understanding the gross anatomy and physiology related to Extra Ocular Muscles.
CO2	Understanding the concept & theories of Binocular single Vision.
CO3	Understanding the concept of Grades of Binocular Vision- SMP, Fusion and Stereopsis.
CO4	Understanding the mechanism of Ocular movement & position of gaze.
CO5	Analyzing the relation between Binocular Single Vision and Various law of Ocular motility.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	**INTRODUCTION TO BINOCULAR VISION**	1. Binocular Vision and Space perception. Relative subjective visual direction. 2. Grades of BSV, SMP and Cyclopean Eye Correspondence, Fusion, Retinal. 3. rivalry, Horopter, Physiological Diplopia and Suppression, Stereopsis, Panum's area. 4. Stereopsis and monocular clues significance, Egocentric localization and its clinical applications. 5. Theories of Binocular vision.	8	CO1
2	**EXTRA OCULAR MUSCLES**	1. Physiology of ocular movement – Basic Kinematics, (position of gaze, Fick's axes) Ocular movements - Monocular Movements (Adduction, Abduction, supraduction, Infraduction, Incycloduction, excycloduction). 2. Binocular Movements –VERSIONS- (saccadic & pursuit movement, position maintenance movements, stabilization movements & their characteristics). VERGENCES – (Convergence, divergence)	8	CO2
3	**ACCOMMODATION**	*1.* Accommodation: Definition and Mechanism, Types of Accommodation *2.* Anomalies -Etiology and Management 3. Method of measurement of accommodation	8	CO3
4	**CONVERGENCE**	1. Convergence- Definition and Mechanism. 2. Method of measurement of vergence. 3. Types and components of Convergence-Tonic, Accommodative, Fusional & Proximal Anomalies of Convergence-Etiology and Management.	8	CO4
5	**SENSORY ADAPTATION**	*1.* Suppression *2.* Blind spot Syndrome *3.* Abnormal Retinal Correspondence *4.* Eccentric Fixation, Egocentric fixation	8	CO5

Reference Books:

1. Binocular Vision and Ocular Motility - VON NOORDEN G K Burian von Norden's, 2 nd Ed., C.V. Mosby Co.St. Louis,1980.
2. Theory and Practice of Squint and Orthoptics by A.K. Khurana.
3. Pradeep Sharma: Strabismus simplified, New Delhi, First edition, 1999, Modern publishers.
4. Fiona J. Rowe: Clinical Orthoptics, second edition, 2004, Blackwell Science Ltd
5. Mitchell Scheiman; Bruce Wick: Clinical Management of Binocular Vision Heterophoric, Accommodative, and Eye Movement Disorders, 2008, Lippincot Williams & Wilkins publishers

e-Learning Source:

1. https://www.youtube.com/watch?v=y9FTgp3ODog
2. https://www.youtube.com/watch?v=K3txN1Kv0CU
3. https://www.youtube.com/watch?v=-oBrLX-5NtI

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	2	2	-	-	-	1	2	1	-	2	2	1	-	1	-
CO2	1	3	1	3	-	-	-	2	3	-	-	3	3	2	-	2	-
CO3	1	3	1	2	-	-	-	1	2	2	-	2	3	1	-	1	-
CO4	1	3	1	2	-	-	-	1	3	-	-	3	2	1	-	1	-
CO5	1	3	1	2	-	-	-	1	2	1	-	2	2	1	-	1	-

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
BO303	BINOCULAR VISION-I	√	√	√	√		√	√	**3,4**

Integral University, Lucknow

Effective from Session: 2021-22							
Course Code	**BO304**	**Title of the Course**	**SYSTEMIC DISEASE & THE EYE**	**L**	**T**	**P**	**C**
Year	**III**	**Semester**	**V**	**3**	**1**	**0**	**4**
Pre-Requisite	**Nil**	**Co-requisite**	**Nil**				
Course Objectives	This course deals with definition, classification, clinical diagnosis, complications and management of various systemic diseases. In indicated cases ocular manifestations also will be discussed.						

Course Outcomes	
CO1	Understanding the basics of systemic Disease having impact on the ocular health.
CO2	Understanding the basics of various systemic Diseases with their clinical features and management.
CO3	Analyzing the Ocular manifestation of some common systemic diseases like DMHT, etc.
CO4	Understanding the pathophysiology of the changes due to ocular underlying systemic disease.
CO5	Applying the knowledge to manage the ocular manifestation of various systemic diseases.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	**HYPERTENSION & DIABETES**	**Hypertension:** Definition, classification, Epidemiology, Clinical features, clinical examination & management. Hypertensive retinopathy & other Ocular manifestation of Hypertension. **Diabetes Mellitus:** Definition, Classification, clinical features, Diagnosis & Management. Diabetic Retinopathy &other Ocular manifestation of Diabetes Mellitus.	8	CO1
2	**THYROID, CANCER & CONNECTIVE TISSUE DISORDER**	**Thyroid Disease:** Physiology, testing for thyroid disease, Hyperthyroidism, Hypothyroidism**,** Grave's Ophthalmopathy & its other Ocular manifestation. **Cancer:** Incidence, Etiology, classification, tumor & its types**,** Grading & staging of cancer, cancer Therapy. Ophthalmologic considerations. **Connective Tissue Disease-** Rheumatic arthritis**,** Scleroderma**,** Sjogren's syndrome**,** Bechet's Disease**,** Eye and connective tissue disease.	8	CO2
3	**AIDS & SYPHILIS**	**HIV-AIDS-** Definition, clinical features, Diagnosis, Prevention & Management. Ocular manifestation of AIDS. **Syphilis-**Definition, clinical features, Diagnosis &Management**.** Ocular manifestation of Syphilis.	8	CO3
4	**TUBERCULOSIS, MALARIA & LEPROSY**	**Tuberculosis-**A etiology, pathology, clinical features, pulmonary tuberculosis, diagnosis & management. Ocular manifestation of Tuberculosis. **Malaria** A etiology, pathology, clinical features & management. Ocular manifestation of Malaria. **Leprosy** A etiology, pathology, clinical features &management. Ocular manifestation of Leprosy.	8	CO4
5	**TOXOPLASMOSIS & VITAMIN A DEFICIENT**	**Toxoplasmosis:** A etiology, pathology, clinical features &Its Ocular Manifestation. **Vitamin A Deficiency**: Xerophthalmia & It's WHO classification**.**	8	CO5

Reference Books:

1. C Haslett, E R Chilvers, N A boon, N R Coledge, J A A Hunter: Davidson's Principles and Practice of Medicine, Ed. John Macleod, 19th Ed., ELBS/Churchill Living stone. (PPM),2002.

***Latest editions of all the suggested books are recommended**

2. Systemic diseases and the Eye by Jack J Kanski.

e-Learning Source:

1. https://www.youtube.com/watch?v=Z6s5-_DocoY
2. https://www.youtube.com/watch?v=e1ZNQeHZeSk
3. https://www.youtube.com/watch?v=TMQ9rq32DFY

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	2	2	-	-	-	1	2	-	-	2	3	1	2	3	-
CO2	1	3	1	3	-	-	-	2	3	-	-	3	3	-	1	2	-
CO3	1	3	1	2	-	-	-	1	2	-	-	2	2	2	1	2	2
CO4	1	3	1	2	-	-	-	1	3	1	-	3	2	3	1	3	2
CO5	1	3	1	2	-	-	-	1	2	2	-	2	3	1	2	2	2

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
BO304	SYSTEMIC DISEASE & THE EYE	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
		√	√	√	√		√	√	**3,4**

Integral University, Lucknow

Effective from Session: 2023-24							
Course Code	**BO305**	**Title of the Course**	**OCCUPATIONAL & COMMUNITY OPTOMETRY**	**L**	**T**	**P**	**C**
Year	**III**	**Semester**	**V**	**3**	**1**	**0**	**4**
Pre-Requisite	**Nil**	**Co-requisite**	**Nil**				
Course Objectives	The objective of this course is to provide knowledge of general aspects of occupational health, Visual demand in various jobs, task analyzing method, visual standards for various jobs, occupational hazards and remedial aspects.						

Course Outcomes	
CO1	Understanding the role of various national and international bodies in guiding and maintaining standards of Visual Hygiene and framing various Acts and rules.
CO2	Understanding the effects of various occupational hazards on the eye and applying Optometric expertise to provide protective measures and eye gears.
CO3	Analyzing and applying various eye screening methods for various task job sand providing necessary eye protections and guidelines to avoid eyes train and fatigue.
CO4	Understanding the role of optometrist in public health and in various communities and school eye screening.
CO5	Having acknowledged about various eye program and screening procedures and analyzing the importance of teleophthalmology in the field of optometry.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	**OCCUPATIONAL HEALTH**	A brief introduction to Occupational health, hygiene and safety, international bodies like ILO, WHO, Factories Act, WCA, ESI Act.	8	CO1
2	**COMMUNITY STANDARDS**	1. **Electromagnetic Radiation** and its effects on Eye. Occupational hazards and preventive/protective methods. 2. **Industrial Vision Screening** – Modified clinical method and Industrial Vision test, 3. **Vision Standards**– Railways, Roadways, and Airlines. Visual Display Units.	8	CO2
3	**COMMUNITY EYE CARE PROGRAMS**	Eye in primary health care, Community Eye Care Programs, Community based rehabilitation programs. Nutritional Blindness with reference to Vitamin A deficiency, Vision 2020: The Right to Sight, Screening for eye diseases, National and International health agencies, NPCB.	8	CO3
4	**OPTOMETRIST'S ROLE IN EYE HEALTH PROGRAMMES & INTRODUCTION TO EYE BANKING**	Role of an optometrist in Public Health, Organization and Management of Eye Care Programs – Service Delivery models, Eye Health man power and planning. Eye banking-Indication, Contra-Indication, Social awareness about Eye Donation, Documentation, Collection and Preservation of Enucleated Eye.	8	CO4
5	**TELE OPTOMETRY**	1. Optometrist's role in school eye health programs, Basics of Tele Optometry and its application in Public Health, Information. 2. Education and Communication for Eye Care programs.	8	CO5

Reference Books:

1. C Haslett, E R Chilvers, N A boon, N R Coledge, J A A Hunter: Davidson's Principles and Practice of Medicine, Ed. John Macleod, 19th Ed., ELBS/Churchill Livingstone. (PPM),2002.
2. A handbook of Ophthalmology by A.K Khurana
3. Essentials of Eye Banking by Anita Panda
4. Environmental and occupational Optometry by Gordon Carson

e-Learning Source:

1. https://www.youtube.com/watch?v=DlpZBSjkJuM
2. https://www.youtube.com/watch?v=GX7vACR3nDU
3. https://www.youtube.com/watch?v=jwwOXlLYQ4Q

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	2	2	-	-	-	1	2	-	-	2	3	1	2	3	-
CO2	1	3	1	3	-	-	-	2	3	-	-	3	3	-	1	2	-
CO3	1	3	1	2	-	-	-	1	2	-	-	2	2	2	1	2	2
CO4	1	3	1	2	-	-	-	1	3	1	-	3	2	3	1	3	2
CO5	1	3	1	2	-	-	-	1	2	2	-	2	3	1	2	2	2

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
BO305	OCCUPATIONAL & COMMUNITY OPTOMETRY	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
		√	√	√	√		√	√	**3,4**

Integral University, Lucknow

Effective from Session: 2023-24							
Course Code	**BO306**	**Title of the Course**	**CONTACT LENS- LAB**	**L**	**T**	**P**	**C**
Year	**III**	**Semester**	**V**	**0**	**0**	**2**	**1**
Pre-Requisite	**Nil**	**Co-requisite**	**Nil**				
Course Objectives	To enable the students to have knowledge in both theoretical and practical aspects of Contact Lenses.						

Course Outcomes: After the successful course completion, learners will develop following attributes:	
CO1	Understanding about contact lens history, introduction, design & relation with structure of eye.
CO2	Understanding about RGP contact lens material & their property their parameter.
CO3	Understanding about RGP contact lens manufacturing techniques & fitting of RGP lenses.
CO4	Understanding and know about care maintenance and do's & don't of RG P contact lens.
CO5	Learn about complication and their management of RGP contact Lenses.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	**PREFITTING EVALUATION**	1. Measurement of Ocular dimensions 2. HVID and Pupil Diameter. 3. Blink rate, Lid Tonicity and TBUT 4. Schirmer's test I & II, Slit lamp examination of tear layer and Ocular Adnexa 5. Keratometry- Corneal Curvature and Diopter.	6	CO1
2	**FITTING ASSESSMENT**	1. RGP Lens fitting – Prefitting Test and Recording. 2. RGP Lens fitting – First Trial lens selection. 3. RGP Lens fitting – Assessment and Recording.	6	CO2
3	**INSERTION & REMOVAL**	1. Lens insertion and removal 2. Lens handling and cleaning 3. Examination of RGP CL.	6	CO3
4	**STATIC & DYNAMIC FITTING**	1. RGP Lens Fit Assessment and fluorescein pattern- Ideal, Steep & Flat. 2. Special RGP fitting (Aphakia, pseudo phakia & Keratoconus) 3. RGP over refraction and Lens flexure 4. Examination of old RGP Lens 5. RGP Lens parameters	6	CO4
5	**FINAL PRESCRIPTION & DISPENSING**	1. Slit lamp examination of Contact Lens wearers 2. Measurement of ocular dimensions 3. Final CL Prescription and Recommendation. 4. Ordering CL	6	CO5

Reference Books:

1. Contact Lenses – Dr. V.K. Dada.
2. Contact Lenses Practice - Robbert B. Mandell
3. Contact lens primer by Monica Chaudhary, Jaypee Brothers medical publishers (P) Ltd
4. IACLE Contact lens modules.
5. Contact lens primer by Monica Chaudhary, Jaypee Brothers medical publishers (P) Ltd.
6. Contact Lenses- Anthony Phillips, Lynne Speedwell.

e-Learning Source:

1. https://www.youtube.com/watch?v=ey7kpRQYaao
2. https://www.youtube.com/watch?v=wlPyYkq3LnY
3. https://www.youtube.com/watch?v=w7skd-AA1PQ

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	2	2	-	-	-	1	2	1	-	2	2	1	-	1	-
CO2	1	3	1	3	-	-	-	2	3	-	-	3	3	2	-	2	-
CO3	1	3	1	2	-	-	-	1	2	2	-	2	3	1	-	1	-
CO4	1	3	1	2	-	-	-	1	3	-	-	3	2	1	-	1	-
CO5	1	3	1	2	-	-	-	1	2	1	-	2	2	1	-	1	-

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
BO306	CONTACT LENS- LAB	√	√	√	√		√	√	**3,4**

Integral University, Lucknow

Effective from Session: 2021-22							
Course Code	**BO307**	**Title of the Course**	**GERIATRIC & PEDIATRIC OPTOMETRY- LAB**	**L**	**T**	**P**	**C**
Year	**III**	**Semester**	**V**	**0**	**0**	**2**	**1**
Pre-Requisite	**Nil**	**Co-requisite**	**Nil**				
Course Objectives	The objective of the course is to provide the students with the knowledge of general and ocular physiological changes of ageing, common geriatric systemic and ocular diseases, clinical approach of geriatric patients and spectacle dispensing aspects in ageing patients as well as the development of the eye and vision, vision assessment and management of vision disorder in pediatric patients.						

Course Outcomes	
CO1	Understanding the concept of structural and functional changes in elderly eye.
CO2	Understanding the concept of systemic diseases of geriatric and pediatric patients.
CO3	Applying concept of optometric Evaluation procedure in children and elderly patients.
CO4	Understanding the concept of ocular drainage and other mechanical systems in children and elderly patients.
CO5	Utilizing the concept of various optical and primarily medicated intervention and the therapeutic procedure in children and elderly patients.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1.	**GERIATRIC SYSTEMIC COMPLICATION**	Identification of common diseases of the eye- ARMD, cataract, glaucoma, macular disorders, vascular.	6	CO1
2.	**GERIATRIC OCULAR COMPLICATION**	Low vision management and rehabilitation in geriatrics.	6	CO2
3.	**GERIATRICDISPENSING**	Assessment of visual acuity and determining binocular status.	6	CO3
4.	**PEDIATRIC DEVELOPMENT**	Slit lamp Examination for appearance, pathology and structural anomalies.	6	CO4
5.	**PEDIATRIC OCULAR COMPLICATION**	Identification of common diseases of the eye- Ophthalmia Neonatorum, Cataract, Retinopathy of Prematurity, Retinoblastoma.	6	CO5

1. Clinical Geriatric Eye Care – Sheree Aston, Joseph Maino – Butterworth Heinemann.
2. Pediatric Optometry –William Harvey/Bernard Gilmartin, Butterworth –Heinemann, 2004.
3. OP Sharma: Geriatric Care–A text book of geriatrics and Gerontology, Viv books, NewDelhi,2005.
4. VS Natarajan: An update on Geriatrics, Sakthi Pathipagam, Chennai,1998
5. DE Rosenblatt, VS Natarajan: Primer on geriatric Care A clinical approach to the older patient, Printers Castle, Cochin,2002
6. Binocular Vision and Ocular Motility-VON NOORDEN G K Burien Von Noorden's, 2nd Ed., C.V. Mosby Co. St. Louis,1980
7. Assessing Children's Vision. By Susan J Leat, Rosalyn H Shute, Carol AWestall.45 Oxford: Butterworth-Heinemann,1999.
8. Clinical pediatric optometry. LJ Press, BD Moore, Butter worth-Heinemann,1993.
9. V S Natarajan: An update on Geriatrics, Sakthi Pathipagam, Chennai,1998
10. Clinical pediatric optometry. LJ Press, B D Moore, Butterworth-Heinemann,1993

e-Learning Source:

1. https://www.youtube.com/watch?v=X7zRRpiazwE
2. https://www.youtube.com/watch?v=lGW_D7YkRGs
3. https://www.youtube.com/watch?v=IS4os7obS0s

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	1	2	-	-	-	1	2	1	-	2	-	1	2	-	3
CO2	2	3	2	2	-	-	-	1	3	1	-	3	-	2	1	-	2
CO3	1	3	1	2	-	-	-	1	2	-	-	2	-	1	2	-	3
CO4	2	3	1	2	-	-	-	1	3	-	-	3	-	2	3	-	3
CO5	1	3	1	2	-	-	-	1	2	1	-	2	-	1	2	-	3

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
BO307	GERIATRIC & PEDIATRIC OPTOMETRY- LAB	√	√	√	√		√	√	**3,4**

Integral Un[illegible], Lucknow

Effective from Session: 2021-22							
Course Code	**BO308**	**Title of the Course**	**HOSPITAL POSTING LAB**	**L**	**T**	**P**	**C**
Year	**III**	**Semester**	**V**	**0**	**0**	**6**	**3**
Pre-Requisite	**Nil**	**Co-requisite**	**Nil**				
Course Objectives	The objective of the hospital posting is to learn about patient handling, radiation and optometric procedures done in the department.						

Course Outcomes	
CO1	Applying the knowledge to manage the ocular manifestation of various systemic diseases.
CO2	Understanding the concept of systemic diseases of geriatric and pediatric patients.
CO3	Applying concept of optometric Evaluation procedure in children and elderly patients.
CO4	Understanding the concept of ocular drainage and other mechanical systems in children and elderly patients.
CO5	Utilizing the concept of various optical and primarily medicated intervention and the therapeutic procedure in children and elderly patients.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1.	**CLINICAL POSTING**	1. The course provides students the opportunity to continue to develop confidence and increased skill in diagnosis and treatment delivery. 2. Students will demonstrate competence in basic, intermediate and advance procedure in those areas. 3. Students will participate in advance and specialized diagnostic and management procedure. 4. Students will get practical experience of the knowledge acquired from geriatric and pediatric optometry courses. 5. Hands-on experience under supervision will be provided in various outreach programs namely, school vision screening, glaucoma and diabetic retinopathy screening etc., 6. Students also get hand-on practical sessions on the following courses namely, contact lens, low vision care, geriatric optometry and pediatric optometry.	**60 hrs.**	**CO1-5**

1. Contact Lenses – Dr. V.K. Dada.
2. Contact Lenses Practice - Robbert B. Mandell
3. Contact lens primer by Monica Chaudhary, Jaypee Brothers medical publishers (P) Ltd
4. IACLE Contact lens modules.
5. Contact lens primer by Monica Chaudhary, Jaypee Brothers medical publishers (P) Ltd.
6. Contact Lenses- Anthony Phillips, Lynne Speedwell.

e-Learning Source:

1. https://www.youtube.com/watch?v=X7zRRpiazwE
2. https://www.youtube.com/watch?v=lGW_D7YkRGs
3. https://www.youtube.com/watch?v=IS4os7obS0s

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	1	2	-	-	-	1	2	1	-	2	-	1	2	-	3
CO2	2	3	2	2	-	-	-	1	3	1	-	3	-	2	1	-	2
CO3	1	3	1	2	-	-	-	1	2	-	-	2	-	1	2	-	3
CO4	2	3	1	2	-	-	-	1	3	-	-	3	-	2	3	-	3
CO5	1	3	1	2	-	-	-	1	2	1	-	2	-	1	2	-	3

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
BO308	HOSPITAL POSTING LAB	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
		√	√	√	√		√	√	**3,4**

INTEGRAL UNIVERSITY, LUCKNOW

INTEGRAL INSTITUTE OF ALLIED HEALTH SCIENCES & RESEARCH

DEPARTMENT OF PARAMEDICAL SCIENCES

BACHELOR OF OPTOMETRY
(B.OPTOM)

SYLLABUS

YEAR/ SEMESTER: III/VI

Integral University, Lucknow
Department of Paramedical Sciences
Study and Evaluation Scheme

Program: BOPT Semester-VI

S. N.	Course code	Course Title	Type of Paper	Period Per hr/week/sem			Evaluation Scheme				Sub. Total	Credit	Total Credits
				L	T	P	CT	TA	Total	ESE			
THEORIES													
1	BO309	Contact Lens –II	Core	3	1	0	40	20	60	40	100	3:1:0	4
2	BO310	Binocular Vision –II	Core	3	1	0	40	20	60	40	100	3:1:0	4
3	BO311	Practice Management	Core	3	1	0	40	20	60	40	100	3:1:0	4
4	BO312	Research Methodology & Biostatistics	Core	2	1	0	40	20	60	40	100	2:1:0	3
PRACTICAL													
1	BO313	Contact Lens –II Lab	Core	0	0	2	40	20	60	40	100	0:0:1	1
2	BO314	Binocular Vision – II Lab	Core	0	0	2	40	20	60	40	100	0:0:1	1
3	BO315	Research Project Proposal Lab	Core	0	0	2	40	20	60	40	100	0:0:1	1
4	BO316	Hospital Posting	Core	0	0	8	40	20	60	40	100	0:0:4	4
Total				**11**	**04**	**14**	**320**	**160**	**480**	**320**	**800**	**22**	**22**

S. N.	Course code	Course Title	Type of Paper	Attributes							United Nation Sustainable Development Goal (SDGs)
				Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
THEORIES											
1	BO309	Contact Lens – II	Core	√	√	√	√		√	√	3,4
2	BO310	Binocular Vision – II	Core	√	√	√	√		√	√	3,4
3	BO311	Practice Management	Core	√	√	√	√		√	√	3,4
4	BO312	Research Methodology & Biostatistics	Core	√	√	√	√		√	√	3,4
PRACTICAL											
1	BO313	Contact Lens II–Lab	Core	√	√	√	√		√	√	3,4
2	BO314	Binocular Vision – II Lab	Core	√	√	√	√		√	√	3,4
3	BO315	Research Project Proposal-Lab	Core	√	√	√	√		√	√	3,4
4	BO316	Hospital Posting	Core	√	√	√	√		√	√	3,4

L: Lecture **T:** Tutorials **P:** Practical **CT:** Class Test **TA:** Teacher Assessment **ESE:** End Semester Examination,
E= Ability enhancement, DSE- Discipline Specific Elective, **Sessional Total:** Class Test + Teacher Assessment **Subject Total:** Sessional Total + End Semester Examination (ESE)

Integral University, Lucknow

Effective from Session: 2023-24							
Course Code	**BO309**	**Title of the Course**	**CONTACT LENS- II**	**L**	**T**	**P**	**C**
Year	**III**	**Semester**	**VI**	3	1	0	**4**
Pre-Requisite	**Nil**	**Co-requisite**	**Nil**				
Course Objectives	To enable the students to have knowledge in both theoretical and practical aspects of Contact Lenses.						

Course Outcomes	
CO1	Understanding about soft contact lens material & their property, selection of parameter
CO2	Understanding about soft contact lens fitting characteristics and evaluation of fitting
CO3	Understanding about toric soft contact lens, stabilization techniques and application
CO4	Learn about complication and their management of soft contact lenses
CO5	Understanding about specialty contact lenses

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	**INTRODUCTION TO SOFT CONTACT LENSES**	1. Soft Contact Lens – raw materials, classification, terminology, etc. 2. Manufacturing Soft Contact Lenses – various methods – advantages & disadvantages. 3. Various designs of Soft Contact Lenses – advantages, disadvantages	8	CO1
2	**FITTING OF SOFT CONTACT LENSES**	1. Pre-Fitting examination – steps, significance, recording of results. 2. Fitting philosophies of Contact Lenses – general outline. 3. Fitting Soft Contact Lenses – methods – Trial set method. 4. Using trial lenses – calculations involved. 5. Fitting Soft Contact Lenses – methods – first fit method. 6. Methods of assessment of Soft Contact Lens fit. 7. Types of fit – Steep, Flat, Optimum 8. Calculation and finalizing of Soft Contact Lens parameters.	8	CO2
3	**CARE AND MAINTENANCE OF SOFT LENS**	1. Contact lens solutions – composition, necessity, advantages. 2. Teaching the patient to insert and remove soft lenses. 3. Common handling instructions to first time wearers.	8	CO3
4	**COMPLICATION OF SCL**	1. Special instructions to the patient for using soft lenses. 2. Special Soft lenses – Cosmetics, Disposable, Toric, X-Chrome lens. 3. Special Rigid Lenses and designs – Toric, Keratoconus, etc 4. Therapeutic CL- definition, Applications, fitting, after care. 5. Rose K lens 6. Scleral & semi-scleral.	8	CO4
5	**SPECIALTY CONTACT LENS**	1. Ortho-Keratology and myopia. 2. Fitting Bifocals and multifocal – RGP & Soft lenses. 3. After care and follow-up for all Contact Lens patients. 4. Patient Problems – identification, differential diagnosis and management 5. Market Availability	8	CO5

Reference Books:

1. Contact Lenses – Dr. V.K. Dada.
2. Contact Lenses Practice - Robbert B. Mandell
3. Contact lens primer by Monica Chaudhary, Jaypee Brothers medical publishers (P) Ltd
4. IACLE Contact lens modules.
5. Contact lens primer by Monica Chaudhary, Jaypee Brothers medical publishers (P) Ltd.
6. Contact Lenses- Anthony Phillips, Lynne Speedwell.

e-Learning Source:

1. https://www.youtube.com/watch?v=ey7kpRQYaao
2. https://www.youtube.com/watch?v=wlPyYkq3LnY
3. https://www.youtube.com/watch?v=w7skd-AA1PQ

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	1	2	-	-	-	1	1	1	-	3	2	2	1	1	1
CO2	1	3	2	2	-	-	-	1	1	1	-	3	2	2	1	1	1
CO3	1	3	1	2	-	-	-	1	1	1	-	3	2	1	1	1	1
CO4	2	3	1	2	-	-	-	1	1	1	-	3	2	2	1	1	1
CO5	1	3	1	2	-	-	-	1	1	1	-	3	2	1	1	1	1

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
BO309	CONTACT LENS- II	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
		√	√	√	√		√	√	**3,4**

Integral University, Lucknow

Effective from Session: 2023-24							
Course Code	**BO310**	**Title of the Course**	**BINOCULAR VISION – II**	**L**	**T**	**P**	**C**
Year	**III**	**Semester**	**VI**	3	1	0	**4**
Pre-Requisite	**Nil**	**Co-requisite**	**Nil**				
Course Objectives	The objective of this course is to inculcate the student with the knowledge of different types of strabismus, its etiology, clinical features, necessary investigations and management.						

Course Outcomes	
CO1	Understanding the gross anatomy and physiology related to Extra Ocular Muscles.
CO2	Understanding the concept & theories of Binocular single Vision.
CO3	Understanding the concept of Grades of Binocular Vision- SMP, Fusion and Stereopsis.
CO4	Understanding the mechanism of Ocular movement & position of gaze.
CO5	Analyzing the relation between Binocular Single Vision and Various law of Ocular motility.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	**NEURO-MUSCULAR ANOMALIES**	Neuro-muscular anomalies- Classification and etiological factors, signs and management	8	CO1
2	**CONVERGENT & DIVERGENT STRABISMUS**	1. Convergent strabismus- Accommodative convergent squint- Classification, etiology, risk factors, Investigation and Management. 2. Non-accommodative Convergent squint- Classification, etiology, risk factors, Investigation and Management. 3. Divergent Strabismus- Classification, etiology, risk factors, Investigation and Management. 4. A& V pattern strabismus: Classification, etiology, risk factors, Investigation and Management.	8	CO2
3	**VERTICAL & PARALYTIC STRABISMUS**	1. Vertical Strabismus-Classification, etiology, Investigation and Management. 2. Paralytic Strabismus- Classification, etiology, Investigation and Management, Restrictive Squint.	8	CO3
4	**INVESTIGATION & DIAGNOSIS**	History taking of squint patient, Head Posture of strabismus patient, Diplopia Charting, Hess charting, Prism bar cover test, Nine cardinal direction of gaze, Amblyopia: classification, risk factors, signs, investigation and management and recent modalities in the treatment of Amblyopia, Nystagmus: classification, risk factors, signs, investigation and management.	8	CO4
5	**MANAGEMENT OF STRABISMUS**	Non-surgical Management of Squint, Musculo- fascial anomalies, Duane's Retraction syndrome: Clinical features, classification, investigations and management, Brown's Superior oblique sheath syndrome, Strabismus fixus, Congenital muscle, fibrosis.	8	CO5

Reference Books:

1. Gunter K. Von Noorden: BURIAN- VON NOORDEN'S Binocular vision and ocular motility theory and management of strabismus, Missouri,
2. Second edition, 1980, C. V. Mosby Company.
3. Pradeep Sharma: Strabismus simplified, New Delhi, First edition, 1999, Modern publishers.
4. Fiona J. Rowe: Clinical Orthoptics, second edition, 2004, Blackwell Science Ltd

e-Learning Source:

1. https://www.youtube.com/watch?v=y9FTgp3ODog
2. https://www.youtube.com/watch?v=K3txN1Kv0CU
3. https://www.youtube.com/watch?v=-oBrLX-5NtI

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	1	2	-	-	-	1	2	-	-	2	2	1	-	1	1
CO2	1	3	1	3	-	-	-	1	3	-	-	3	3	2	-	1	1
CO3	1	3	1	2	-	-	-	1	2	-	-	2	3	1	-	1	1
CO4	1	3	1	2	-	-	-	1	3	-	-	3	2	1	-	1	1
CO5	1	3	1	2	-	-	-	1	2	-	-	2	2	1	-	1	1

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
BO311	BINOCULAR VISION – II	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
		√	√	√	√		√	√	**3,4**

Integral University, Lucknow

Effective from Session: 2021-22							
Course Code	**BO311**	**Title of the Course**	**PRACTICE MANAGEMENT**	**L**	**T**	**P**	**C**
Year	**III**	**Semester**	**VI**	**3**	**1**	**0**	**4**
Pre-Requisite	**Nil**	**Co-requisite**	**Nil**				
Course Objectives	The objective of this course is to provide knowledge regarding business, accounting, taxation, professional values, and quality and safety aspects of optometry practice management.						

Course Outcomes	
CO1	Understanding the concepts of Business Management and Practice Establishment.
CO2	Analyzing and applying various aspects of Stocking, staffing and business Computerization in running an Optometry Clinic, Optical outlet or business.
CO3	Understanding, Analyzing and Applying various aspects of Taxation and Taxation Planning.
CO4	Applying professional values, ethics and Confidentiality in the workplace establishment.
CO5	Understanding, Analyzing and Applying various aspects of professionalism, integrity, objectivity, personal values, teamwork, etc. in running a business efficiently.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	**BUSINESS MANAGEMENT**	Business Management: Practice establishment and development, Stock control and costing, Staffing and staff relations, Business computerization.	8	CO1
2	**ACCOUNTING**	Accounting Principles, Sources of finance, Bookkeeping, and cashflow.	8	CO2
3	**TAXATION**	Taxation and taxation planning.	8	CO3
4	**PROFESSIONAL VALUES**	Professionalism and Values, Professional values- Integrity, Objectivity, Professional competence and due care, Confidentiality.	8	CO4
5	**PERSONAL VALUES**	Personal values- ethical or moral values, Attitude and behavior- professional behavior, treating people equally, Code of conduct, professional accountability and responsibility, misconduct, Differences between professions and importance of team efforts, Cultural issues in the healthcare environment.	8	CO5

Reference Books:

Facultyto recommend

*** Latest editions of all the suggested books are recommended**

e-Learning Source:

1. https://www.youtube.com/watch?v=V0GQsYeirb0
2. https://www.youtube.com/watch?v=mKJDPkd6Z0o

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
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CO2	1	3	-	2	-	-	-	-	1	-	-	1	2	1	3	2	1
CO3	2	3	-	2	-	-	-	-	1	1	-	1	2	1	3	2	1
CO4	1	3	-	1	-	-	-	-	1	-	-	1	2	1	3	2	1
CO5	2	3	-	1	-	-	-	-	1	-	-	1	2	1	3	2	1

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
BO311	PRACTICE MANAGEMENT	√	√	√	√		√	√	**3,4**

Integral University, Lucknow

Effective from Session: 2021-22							
Course Code	**BO312**	**Title of the Course**	**RESEARCH METHODOLOGY & BIOSTATISTICS**	**L**	**T**	**P**	**C**
Year	**III**	**Semester**	**VI**	**2**	**1**	**0**	**3**
Pre-Requisite	**Nil**	**Co-requisite**	**Nil**				
Course Objectives	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. The students will also be made aware of the need of biostatistics and understanding of data, sampling methods, in addition to being given information about the relation between data and variables.						

Course Outcomes	
CO1	Apply the principles of research and biostatistics to health practice including the design and implementation of health-related research studies.
CO2	Plan and execute a research study, including clinical trials.
CO3	Use / organize bio-statistical analysis using computers and software's and prepare reports.
CO4	Critically evaluate research activities.
CO5	Make recommendations on policy and procedures. Plan and conduct an educational session.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	**RESEARCH METHODOLOGY & DESIGN**	Research Methodology: Introduction to research methods, identifying research problem. Ethical issues in research- Research design, Basic Concepts of Biostatistics.	6	CO1
2	**DATA TYPES**	Types of Data- Research tools and Data collection methods, sampling methods, Developing a research proposal.	6	CO2
3	**BIOSTATISTICS**	1. Biostatistics: Need of biostatistics, what is biostatistics: beyond definition, understanding of data in biostatistics, how & where to get relevant data, Relation between data & variables. 2. Type of variables: defining data set, Collection of relevant data: sampling methods.	6	CO3
4	**INTERPRETATION**	Normal Distribution, Standard deviation, Standard errors. Coefficient of Variation, t-test, Chi square test.	6	CO4
5	**STATISTICAL ANALYSIS**	1. Construction of study: population, sample, normality and its beyond (not design of study, perhaps), Summarizing data on the pretext of underlined study. 2. Understanding of statistical analysis (not methods)	6	CO5

Reference Books:

1. Statistical Methods by S.P. Gupta.
2. Methods in biostatistics for medical students by B.K.Mahajan.
3. RPG Biostatistics by Himanshu Tyagi.

e-Learning Source:

1. https://www.youtube.com/watch?v=UtivXLO7c9A&list=PLR3kIPR1Qzzky45nZ4_1HlUCbjVNU0iZx
2. https://www.youtube.com/watch?v=txIS0N0l9xU&list=PLEIbY8S8u_DK7i4Fj6Hgq8sn_l42k9H1L
3. https://www.youtube.com/watch?v=tr8M7jSlYm4

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	-	-	1	-	3	3	2	2	-	2	2	-	-	-	-	1
CO2	2	-	-	2	-	3	2	2	1	-	2	3	-	-	-	-	2
CO3	2	-	-	1	-	3	3	1	2	-	1	2	-	-	-	-	1
CO4	2	-	-	1	-	3	3	2	1	-	2	3	-	-	-	-	1
CO5	2	-	-	2	-	3	2	2	1	-	2	2	-	-	-	-	1

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
BO312	RESEARCH METHODOLOGY & BIOSTATISTICS	√	√	√	√		√	√	**3,4**

Integral University, Lucknow

Effective from Session: 2023-24							
Course Code	**BO313**	**Title of the Course**	**CONTACT LENS- II LAB**	**L**	**T**	**P**	**C**
Year	**III**	**Semester**	**VI**	**0**	**0**	**2**	**1**
Pre-Requisite	**Nil**	**Co-requisite**	**Nil**				
Course Objectives	To enable the students to have knowledge in both theoretical and practical aspects of Contact Lenses.						

Course Outcomes	
CO1	Understanding about soft contact lens material & their property, selection of parameter
CO2	Understanding about soft contact lens fitting characteristics and evaluation of fitting
CO3	Understanding about toric soft contact lens, stabilization techniques and application
CO4	Learn about complication and their management of soft contact lenses
CO5	Understanding about specialty contact lenses

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	**INTRODUCTION TO SOFT CONTACTLENSES**	1. Measurement of Ocular dimensions 2. HVID and Pupil Diameter. 3. Blink rate, Lid Tonicity and TBUT 4. Schirmer's test I & II, Slit lamp examination of tear layer and Ocular Adnexa 5. Keratometry- Corneal Curvature and Diopter.	6	CO1
2	**FITTING OF SOFT CONTACT LENSES**	1. Soft Lens fitting – Prefitting Test and Recording. 2. Soft Lens fitting – First Trial lens selection. 3. Soft Lens fitting – Assessment and Recording.	6	CO2
3	**CARE AND MAINTENANCE OF SOFT LENS**	1. Lens insertion and removal 2. Lens handling and cleaning 3. Examination of soft CL. 4. Slit lamp examination of Contact Lens wearers	6	CO3
4	**COMPLICATION OF SCL**	1. Toric Lens Fit Assessment and fluorescein pattern- Ideal, Steep & Flat. 2. Soft Lens parameters	6	CO4
5	**SPECIALTY CONTACT LENS**	1. Measurement of ocular dimensions 2. Final CL Prescription and Recommendation. 3. Ordering CL	6	CO5

Reference Books:

1. Contact Lenses – Dr. V.K. Dada.
2. Contact Lenses Practice - Robbert B. Mandell
3. Contact lens primer by Monica Chaudhary, Jaypee Brothers medical publishers (P) Ltd
4. IACLE Contact lens modules.
5. Contact lens primer by Monica Chaudhary, Jaypee Brothers medical publishers (P) Ltd.
6. Contact Lenses- Anthony Phillips, Lynne Speedwell.

e-Learning Source:

1. https://www.youtube.com/watch?v=ey7kpRQYaao
2. https://www.youtube.com/watch?v=wlPyYkq3LnY
3. https://www.youtube.com/watch?v=w7skd-AA1PQ

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	-	-	-	-	-	2	-	2	-	-	-	2	-	-	-	-	-
CO2	-	-	-	-	-	2	-	-	-	-	-	2	-	-	-	-	-
CO3	-	-	-	-	-	2	-	1	-	1	-	2	-	-	-	-	-
CO4	-	-	-	-	-	2	2	-	-	-	-	2	-	-	-	-	-
CO5	-	-	-	-	-	2	1	1	-	-	1	2	-	-	-	1	1

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
BO313	CONTACT LENS- II LAB			√					**3,4, 11**

Integral University, Lucknow

Effective from Session: 2023-24							
Course Code	**BO314**	**Title of the Course**	**BINOCULAR VISION – II LAB**	**L**	**T**	**P**	**C**
Year	**III**	**Semester**	**VI**	**0**	**0**	**2**	**1**
Pre-Requisite	**NIL**	**Co-requisite**	**Nil**				
Course Objectives	The objective of this course is to inculcate the student with the knowledge of different types of strabismus, its etiology, clinical features, necessary investigations and management.						

Course Outcomes	
CO1	Understanding the gross anatomy and physiology related to Extra Ocular Muscles.
CO2	Understanding the concept & theories of Binocular single Vision.
CO3	Understanding the concept of Grades of Binocular Vision- SMP, Fusion and Stereopsis.
CO4	Understanding the mechanism of Ocular movement & position of gaze.
CO5	Analyzing the relation between Binocular Single Vision and Various law of Ocular motility.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1.	**NEURO-MUSCULAR ANOMALIES**	*1.* Visual acuity assessment *2.* Retinoscopy	6	CO1
2.	**CONVERGENT & DIVERGENT STRABISMUS**	*1.* Near point of convergence *2.* Near point of accommodation	6	CO2
3.	**VERTICAL & PARALYTIC STRABISMUS**	*1.* Slit lamp evaluation *2.* Keratometer *3.* Subjective refraction techniques	6	CO3
4.	**INVESTIGATION & DIAGNOSIS**	*1.* Diplopia Charting *2.* Hess chart *3.* PBCT *4.* Synaptophore	6	CO4
5.	**MANAGEMENT STRABISMUS**	1. Vision Therapy	6	CO5

Reference Books:

1. Gunter K. Von Noorden: BURIAN- VON NOORDEN'S Binocular vision and ocular motility theory and management of strabismus, Missouri, Second edition, 1980, C. V. Mosby Company.
2. ***Latest editions of all the suggested books are recommended**

e-Learning Source:

1. https://www.youtube.com/watch?v=y9FTgp3ODog
2. https://www.youtube.com/watch?v=K3txN1Kv0CU
3. https://www.youtube.com/watch?v=-oBrLX-5NtI

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	1	2	-	-	-	1	1	1	-	3	2	2	1	1	1
CO2	1	3	2	2	-	-	-	1	1	1	-	3	2	2	1	1	1
CO3	1	3	1	2	-	-	-	1	1	1	-	3	2	1	1	1	1
CO4	2	3	1	2	-	-	-	1	1	1	-	3	2	2	1	1	1
CO5	1	3	1	2	-	-	-	1	1	1	-	3	2	1	1	1	1

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
		Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
BO314	BINOCULAR VISION – II LAB	√	√	√	√		√	√	**3,4**

Integral University, Lucknow

Effective from Session: 2023-24							
Course Code	**BO315**	**Title of the Course**	**RESEARCH PROJECT PROPOSAL- LAB**	**L**	**T**	**P**	**C**
Year	**III**	**Semester**	**VI**	0	0	2	**1**
Pre-Requisite	**Nil**	**Co-requisite**	**Nil**				
Course Objectives	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. The students will also be made aware of the need of biostatistics and understanding of data, sampling methods, in addition to being given information about the relation between data and variables.						

Course Outcomes	
CO1	Apply the principles of research and biostatistics to health practice including the design and implementation of health-related research studies.
CO2	Plan and execute a research study, including clinical trials.
CO3	Use / organize bio-statistical analysis using computers and software's and prepare reports.
CO4	Critically evaluate research activities.
CO5	Make recommendations on policy and procedures. Plan and conduct an educational session.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	**DATA**	1. Team of students will be doing a research project under the guidance of a supervisor (who could be optometrists/vision scientists/ ophthalmologist). Student will get the experience of doing research in systematic approach – identifying the primary question, literature search, identifying the gaps in the literature, identifying the research question, writing up the research proposal, data collection, data analysis, thesis writing and presentation.	15	CO1, CO2, CO3
2	**PROJECT**	2. Project is spread through sixth to eighth semester.	15	CO4, CO5

Reference Books:

1. Statistical Methods by S.P. Gupta.
2. Methods in biostatistics for medical students by B.K.Mahajan.
3. RPG Biostatistics by Himanshu Tyagi.

e-Learning Source:

4. https://www.youtube.com/watch?v=UtivXLO7c9A&list=PLR3kIPR1Qzzky45nZ4_1HlUCbjVNU0iZx
5. https://www.youtube.com/watch?v=txIS0N0l9xU&list=PLEIbY8S8u_DK7i4Fj6Hgq8sn_l42k9H1L
6. https://www.youtube.com/watch?v=tr8M7jSlYm4

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
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CO2	1	3	1	3	-	-	-	1	3	-	-	3	3	2	-	1	1
CO3	1	3	1	2	-	-	-	1	2	-	-	2	3	1	-	1	1
CO4	1	3	1	2	-	-	-	1	3	-	-	3	2	1	-	1	1
CO5	1	3	1	2	-	-	-	1	2	-	-	2	2	1	-	1	1

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	Course Title	Attributes							SDGs No.
BO315	RESEARCH PROJECT PROPOSAL- LAB	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
		√	√	√	√		√	√	**3,4**

Integral University, Lucknow

Effective from Session: 2021-22							
Course Code	**BO316**	**Title of the Course**	**HOSPITAL POSTING LAB**	**L**	**T**	**P**	**C**
Year	**III**	**Semester**	**VI**	0	0	8	**4**
Pre-Requisite	**Nil**	**Co-requisite**	**Nil**				
Course Objectives	The objective of this course is to inculcate the student with the knowledge of different types, its etiology, clinical features, necessary Optometry investigations and management.						

Course Outcomes	
CO1	Analyzing the relation between Binocular Single Vision and Various law of Ocular motility.
CO2	Applying professional values, ethics and Confidentiality in the workplace establishment.
CO3	Learn about complication and their management of soft contact lenses
CO4	Understanding the mechanism of Ocular movement & position of gaze.
CO5	Analyzing the relation between Binocular Single Vision and Various law of Ocular motility.

Unit No.	**Title of the Unit**	**Content of Unit**	**Contact Hrs.**	**Mapped CO**
1	**CLINICAL POSTING**	The student will undergo all the aspects of Comprehensive Optometry and will complete the clinical training by practicing all the skills learned in classroom and clinical instruction. Practical aspects of Binocular vision II, public health & community optometry, and occupational optometry will be covered under the studentship.	80	CO1, CO2, CO3, CO4, CO5

Reference Books:

1. Gunter K. Von Noorden: BURIAN- VON NOORDEN'S Binocular vision and ocular motility theory and management of strabismus, Missouri, Second edition, 1980, C. V. Mosby Company.
2. Contact lens primer by Monica Chaudhary, Jaypee Brothers medical publishers (P) Ltd
3. IACLE Contact lens modules.

e-Learning Source:

1. https://www.youtube.com/watch?v=UtivXLO7c9A&list=PLR3kIPR1Qzzky45nZ4_1HlUCbjVNU0iZx
2. https://www.youtube.com/watch?v=txIS0N0l9xU&list=PLEIbY8S8u_DK7i4Fj6Hgq8sn_l42k9H1L
3. https://www.youtube.com/watch?v=tr8M7jSlYm4

	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	1	2	-	-	-	1	2	-	-	2	2	1	-	1	1
CO2	1	3	1	3	-	-	-	1	3	-	-	3	3	2	-	1	1
CO3	1	3	1	2	-	-	-	1	2	-	-	2	3	1	-	1	1
CO4	1	3	1	2	-	-	-	1	3	-	-	3	2	1	-	1	1
CO5	1	3	1	2	-	-	-	1	2	-	-	2	2	1	-	1	1

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Attributes & SDGs

Course Code	**Course Title**	**Attributes**							**SDGs No.**
BO316	HOSPITAL POSTING LAB	Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics	
		√	√	√	√		√	√	**3,4**